THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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See page 57

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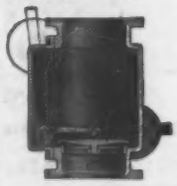

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THE IRON AGE

New York, Thursday, January 17, 1907.

A Large Kane Straightener.

Two views of what is claimed to be the largest straightening machine ever built are given in the accompanying illustrations, Fig. 1 showing the screw-down operating side and one end, and Fig. 2 the opposite end. It weighs over 60 tons, measures about 13 ft. high by 16½ ft. long and by 18 ft. wide over all, and was built for the Phœnix Iron Company, Phœnixville, Pa., by Kane & Roach, Syracuse, N. Y. This is a special nine-roll machine, known as the Kane No. 8 straightener, and has

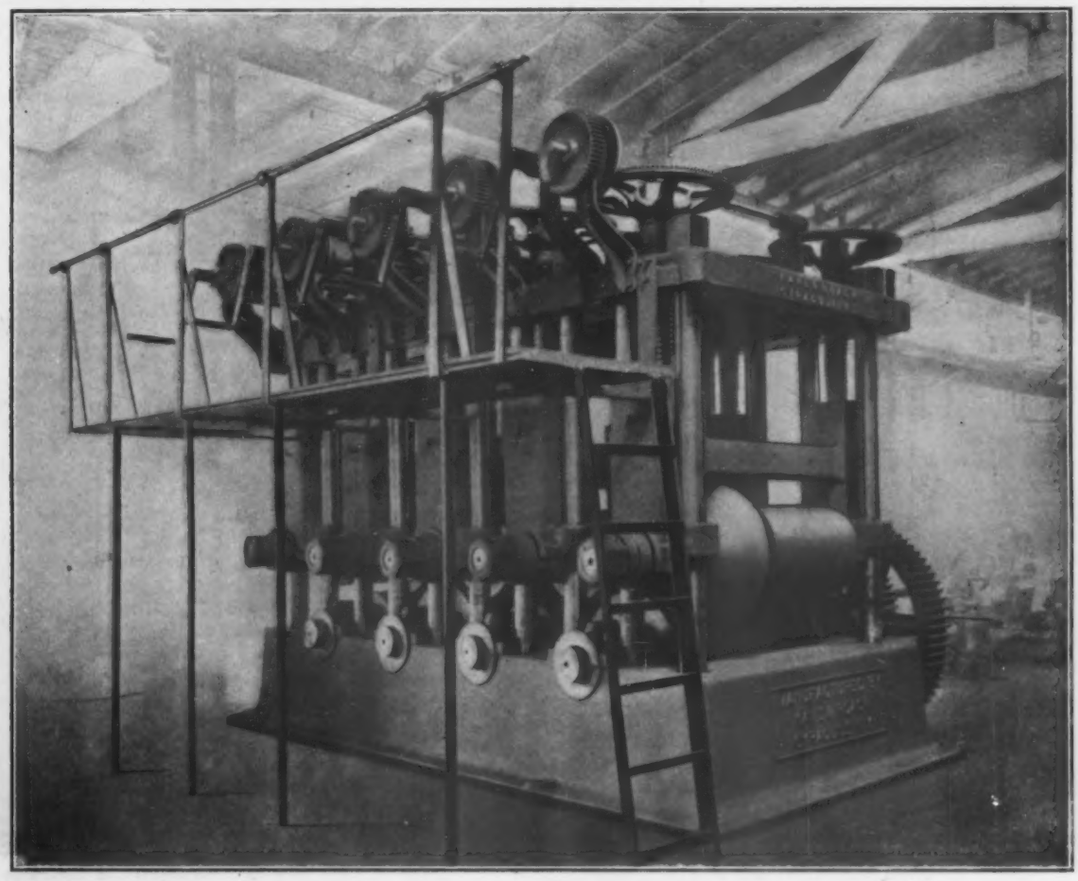


Fig. 1.—The Kane Patent No. 8 Nine-Roll Straightener, Built by Kane & Roach, Syracuse, N. Y.

five upper and four lower rolls. This gives an upper overhanging roll on each end, which are the principal or main controlling rolls of the machine, as the final adjusting to make the stock come out true is done with the end rolls. As both ends of this machine are alike it may be run in either direction, and the material may be fed through equally well from either end, which is very important for many classes of work.

This machine is made to straighten all sizes of I-beams and channels up to 24 in. and all sizes of angles up to 10 x 10 x 1¼ in., which is far heavier straightening work than has ever been attempted before. The rolls on this machine are nearly 20 in. in diameter and 42½ in. long. The machine is geared for two changes of speed, obtained through a double clutch operated by a lever. This lever is used to start or stop the machine, and thrown to one side engages the gear that gives the slow speed, and thrown to the other engages the other gear, giving a speed twice as fast as the slow speed. Thus the speed and power can be regulated according to the class of work being put through the machine. The gears are extra heavy and are made of cast steel.

The 20 upright columns that support the top and take the strain are about 5 in. in diameter, and the adjusting screws to raise and lower the upper rolls are 5 in. in diameter. The machine is arranged so every other column can be dropped out and the rolls can be taken out through the side of the machine, to be re-turned or dressed. The upper rolls are adjustable both vertically and laterally. Generally these machines are made with the shafts extended on the side shown in Fig. 1 to take outside rolls for other classes of work than that for which the inside rolls are arranged, but they were ordered omitted on the machine illustrated. This is a very important feature and a great advantage where a larger variety of work is done than can be put on the inside rolls, or where it is advantageous to avoid too frequent changing of the inside rolls.

As Fig. 1 shows, a gallery is provided for a man to stand on to adjust the rolls as they may need it and an index dial facilitates adjusting.

This machine is arranged for direct connection to a reversible motor, so as to run the machine in either direction. It is very powerfully geared. All the roll journals are very large and long and the boxes are of extra hard bronze and interchangeable.

The builders make a large variety of styles and sizes of straightening machines, from the lightest wire

straightener up to machines to straighten the heaviest product of any mills, whether rails, I-beams, channels, sheets, angles, bar iron, or any special shapes.

The Annealing of Malleable Castings.

Writing in *Cassier's Magazine* on the "Production of Malleable Castings," Dr. Richard Moldenke refers to the efforts made to shorten the period of annealing. The difficulty is in the tendency of the carbon to return to the combined form when the period of conversion is shortened by using a high heat. Attempts to use higher annealing heats have been disastrous financially. The temperature of annealing furnace iron castings is from 1250 to 1350 degrees F., taken at the coldest point in the annealing oven. On the general subject of annealing the writer says:

The question of annealing is an interesting one. A short heating to the proper temperature on the part of a hard gray iron casting softens it sufficiently to allow machining. This is the conversion of the comparatively small amount of combined carbon present over the normal figure to the "temper" carbon of the malleable casting. This "temper" carbon, so named by the late Professor Ledebur from "temperguss," the German for malleable cast iron, is an uncrystallized graphite which has the peculiar property of recombining at a temperature below the melting point. Thus heating an annealed casting red hot and plunging into water usually makes its structure white again, but this structure is now that of a high carbon steel rather than a white iron. While, therefore, this short annealing of a hard gray casting does it good, the continued heat of the malleable casting process applied to the same casting would ruin it, by allowing the penetration of oxygen, burning, or at least oxidizing, each crystal of iron, separated, as they are, by the flakes of graphite in the gray casting. Hence the necessity of keeping out graphite from the hard casting intended for the malleable anneal.

The annealing process is further interesting from the fact that only the conversion of the carbon is a necessity to make malleable cast iron, and not the removal of the carbon from the skin, which is the understanding generally. While this removal of the carbon in the skin does take place in the ordinary process where an iron oxide is used for packing the castings into the annealing pots, yet by doing this in sand or in fire clay the same results are obtained, the only difference being a smaller tensile strength. As the flakes dropping from the annealing pots can be crushed and used for the packing medium, there is no necessity to resort to annealing in sand in order to save money, especially as a weaker casting is the result. Experiments made with numerous test bars, the skin of which had been removed from half their length, showed that the black interior of a malleable casting having the original amount of carbon intact, though converted from the combined state, is but 2000 to 3000 lb. per square inch less in tensile strength than the bar with the skin left on.

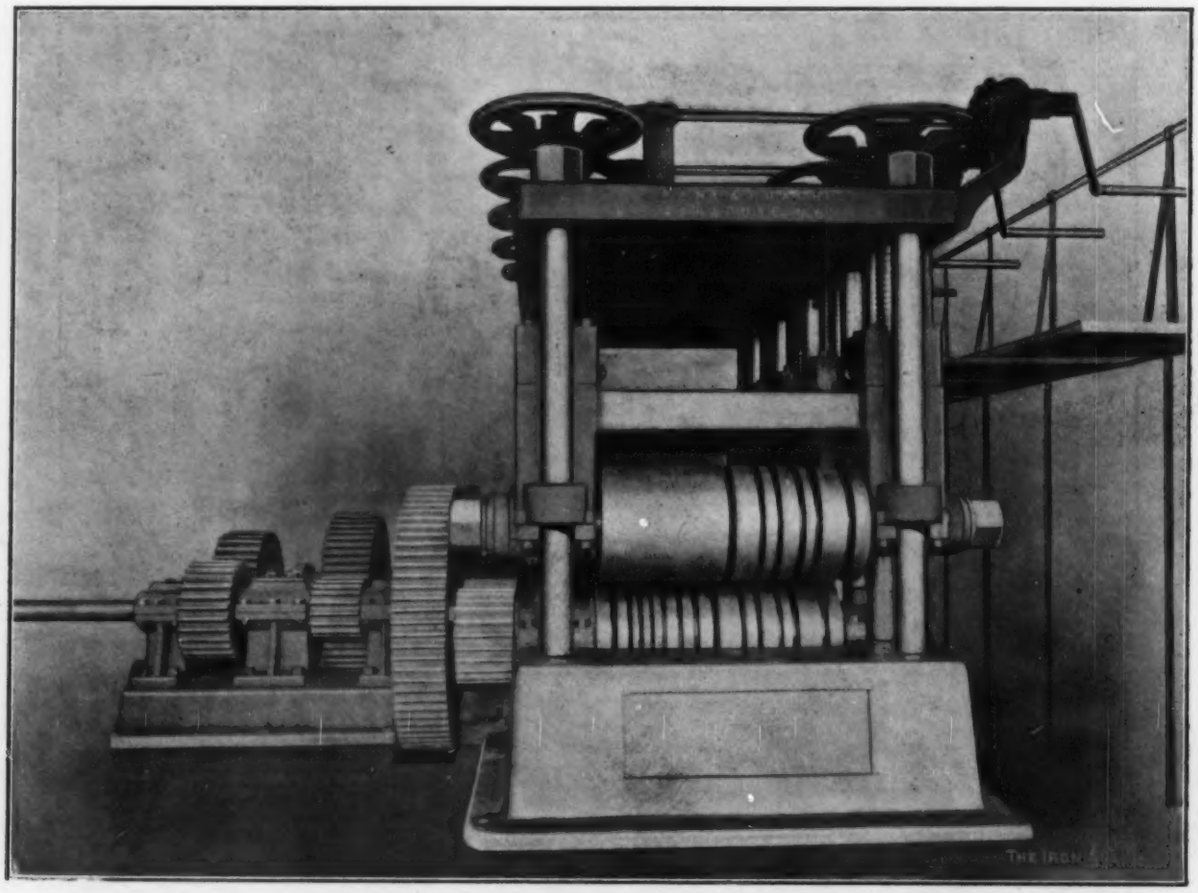


Fig. 2.—An End View of the Kane Straightener.—This Machine Weighs Over 60 Tons.

The founder has to deal with many molding problems also, for the contraction of the hard casting is twice that of a soft gray one. The annealing process restores half of this shortening up in length, breadth and thickness, but the consequence is that very large castings are difficult, if not impossible, to make without concealed cracks occurring where least wanted. Furthermore, the internal shrinkage of the metal is a serious question, taking place at abrupt changes of section and sharp angles. Hence the use of chills in the molds to overcome this difficulty. On the whole, therefore, the malleable casting is seldom over 175 lb. in weight, or 3 ft. in length, or ¾ in. in thickness. The great majority of even the heavier castings do not exceed 10 lb.

It is stated that 11 iron and steel companies in Bilbao and the north of Spain have formed a syndicate, with a term of five years, for the purpose of regulating output and marketing product.

The Birmingham District.

Some Details of Important Improvements Under Way.

BIRMINGHAM, ALA., January 12, 1907.—The improvement work now going on at the blast furnaces and steel works of some of the largest Southern companies is of unusual interest and importance. Bare mention of the plans for some of this has been made heretofore. Chief in importance measured by the expenditure of money involved is the new construction work of the Tennessee Coal, Iron & Railroad Company. Reference has already been made to the fact that this company has installed a number of coal washing machines at its leading mines and is providing increased facilities for iron mining at its red ore properties. It is interesting to note in connection with the expenditures it is making for its iron and coal mines that a policy of storing ore and coke has been adopted in recent months. The uncertainties of negro labor at mines and furnaces were emphasized in 1906, and the management is meeting them by providing storage room for ore and coke to tide over some of the periods of most serious interruption of operations at its blast furnaces and steel works. In the recent holiday season the idleness of labor at iron and coal mines and at coke ovens of the Tennessee Company proved less serious than usual, owing to the forehanded policy followed for weeks preceding. More would have been done in the accumulation of raw materials under ordinary conditions of transportation, but as is well known the railroad embargo has been unusual for months.

Large Bessemer Converters at Ensley.

In connection with the large programme of new work now being carried out at Ensley the most significant feature, and one of which mention has not been made heretofore, is that the company is installing the largest Bessemer converters in the country for its duplex process, and is also building the largest tilting open hearth furnaces in the country. The four basic furnaces of which the new steel plant will consist will have a capacity of over 6000 tons a month each, and are expected to turn out 300,000 tons of steel a year, or more than the capacity of the 10 tilting open hearth furnaces in the present steel plant. When the new furnaces are completed work will begin at once on the reconstruction of the old plant, and eventually four large tilting furnaces, such as are now under construction, will replace the 10 furnaces now in use.

One 10-ton converter is now used at the Ensley plant for the preliminary blow, in which the silicon and carbon of the metal as it comes from the mixer are considerably reduced. Two new 20-ton converters are being built, and these will take care of all the metal coming from the two 250-ton mixers, which are being provided for the steel plant as it will stand when the new furnaces have been completed and the present furnaces have been replaced by duplicates of the new plant. The power requirements for the new steel plant are naturally very large, and these and the central electric equipment now being provided to furnish electricity for all the Ensley operations involve heavy outlays. A number of mechanical features which the engineering staff of the company has planned for the new plant at Ensley involve innovations, the result of which will be watched with great interest.

Southern Steel Company.

At the Ensley rod and wire mills of the Southern Steel Company some changes are being made, which are of special moment as being the outcome of the experience of the company under the uneconomical labor conditions which have prevailed in the South, and that have been particularly marked under the present prosperity régime. Machinery is to be provided to displace common labor for handling material in the yards and in and out of the mill. A billet handling crane of 100 ft. span and 5 tons capacity is being furnished by the Morgan Engineering Company, Alliance, Ohio. By the use of disk magnets the crane will carry a bundle of eight 180-lb. billets, making a load of 1400 to 1500 lb. In the rod mill a new continuous heating furnace is being added.

An interesting feature of the new work at this plant is the telpherage system now being installed by the United Telpherage Department of the Dodge Coal Storage Company, Philadelphia. A telpherage runway of steel construction having a length of approximately 2500 ft. will connect the two boiler houses, the rod mill, cleaning shop, machine shop and railroad tracks, besides covering a large area of the storage yard. This system will handle all the company's products between the rod mill and the cleaning house, and to storage in the yard, if desired, and will also convey the product to the rod mill for direct shipment. In addition ashes will be conveyed from the boiler houses and dumped into railroad cars for disposal. There will be two telpher hoisting machines, each having a capacity for hoisting and conveying a load of 3000 lb. The hoisting speed will be 60 ft. per minute and the traveling speed 700 ft. per minute. The original conveying system in the rod mill is being replaced by a leaf conveyor, which will carry rods from the reels to buggies and to the telpher machine.

Other improvements at Ensley include additions to boiler capacity and the installation of a considerable number of Horton continuous wire drawing machines. This machine was described in *The Iron Age* of January 3, 1907, in the article on the new plant of the Shenandoah Steel Wire Company at South Buffalo, N. Y. Upon completion of the improvements referred to the plant at Ensley will have a daily capacity of 400 tons of wire products.

The original open hearth plant of the Southern Steel Company at Gadsden, Ala., consisted of four 50-ton furnaces. To these are now being added two 50-ton furnaces, and the open hearth building is being extended by one-half its original length. Ten Forter-Miller gas producers will serve the two new open hearth furnaces, it being found desirable to increase the number of producers from four to each open hearth furnace, as in the original plant, to five. Forter-Miller reversing valves will be used. Some alterations in the original type of these valves have been made with a view to giving a more perfect seal and a better seating. On the casting side of the open hearth department a Morgan auxiliary crane is being installed with 30 tons capacity. For the more convenient handling of billets a 15-ton Morgan crane is being provided, which will command the billet yard at the end of the blooming mill. The billets are cradled for handling in the shipping yard, and for this purpose the discarded galvanizing pans from the wire plant of the company at Ensley are employed.

At the blast furnace at Gadsden a fourth Southwark blowing engine will be installed, and it is expected that from 260 to 275 tons of pig iron a day will be produced at this furnace in the near future. Ultimately direct metal will be taken to the open hearth furnaces. The skull cracking outfit has been increased by an auxiliary drop. Increased raw material outputs are being secured at the various properties of the company, which will contribute to the larger production at the Gadsden Furnace. At the Virginia, Ala., coke oven plant 100 new ovens are nearing completion, making a total of 300. Gas and steam coal for the Gadsden plant is brought from the Altoona mines, 18 miles west of Gadsden. The limestone supply is derived in part from a quarry at Trussville, Ala., and in part from a quarry of the company on the Chattanooga Southern Railroad between Gadsden and Chattanooga.

Republic Iron and Steel Company.

At the Thomas Furnace of the Republic Iron & Steel Company extensive improvements have been in progress for the past few months, and are still uncompleted. At the No. 1 and No. 2 furnaces of this group new Massicks & Crooke stoves, four to each furnace, are being constructed, and 4000 hp. of Stirling boilers in batteries of 500 hp. will replace the horizontal boilers heretofore in use. An important feature is the displacement of the old I. P. Morris beam blowing engines by six Allis-Chalmers blowing engines of the disconnected cross compound type. These will be 44 x 84 x 60 in. and 84 x 84

x 60 in. Two Weimer blowing engines now in service will be retained. These are 40 x 84 x 60 in. A central condensing plant of the Weiss type is being installed by the Southwark Foundry & Machine Company, Philadelphia, to take care of the eight blowing engines. To accommodate the increased power a new engine house is necessary. Cooling towers will be built for cooling the water of condensation. These will be completed by the middle of the year. A new pump house is also under way, in which will be concentrated the pumps for the furnace plant. In connection with the increase of the power plant two 4000-hp. Cochrane heaters will be supplied and considerable auxiliary equipment, consisting of oil separators, steam traps, new piping, &c.

At No. 3 furnace two Allis-Chalmers engines are being added similar to the six referred to above. A Uehling double strand casting machine is being installed, and as part of the auxiliary equipment a hydraulic ladle tilter and a car spotter. A new ladle house of structural steel will be 50 x 90 ft. The skulling of ladles, ladle drying and preparation of refractories will be carried on in this building. Additional railroad tracks are provided for, and 12 100,000-lb. steel hopper cars have been ordered for the hauling of coal to the coke ovens adjoining the blast furnaces.

Carnegie Armor Plate Safety Vaults.

The National City Bank, New York, has contracted with the Carnegie Steel Company, Pittsburgh, Pa., for the construction of the latest type of depository armor plate vault, to be erected in its remodeled building on Wall street, formerly the United States Custom House. It will be the first to be installed in New York. The vault will be of such construction as to assure immunity against fire, burglars, mobs, electricity, or any agent of destruction. It will be practically 25 ft. square, with an upper and lower compartment. The upper compartment will be entered from the banking room floor, through two vestibules, each fitted with outside circular doors and inside folding doors. Access to the lower or basement compartment will be by a staircase and an electric elevator. Experts of the Carnegie Steel Company have studied and experimented at great expense in the construction of vaults, until they are able to combine in the plans for this one every modern idea for protection against forced entrance through the locking mechanism, as well as the absolute security guaranteed by nickel steel Harveyized armor plate, which is the same material as that used for protecting battleships and armored cruisers.

While a large number of this modern type of armor vaults have been constructed for prominent fiduciary institutions in this country, the vault to be constructed for the National City Bank will be equaled in size only by those of the Union Safe Deposit Company in the Frick Building, Pittsburgh, the great vaults now being constructed by the Carnegie Steel Company for the Union National Bank, Pittsburgh, and the Commercial National Bank, Chicago—the last named being the largest vault ever constructed. The one solid piece idea is carried out by dovetailing together the massive plates forming the vault, averaging in weight 21 tons each, and no bolts or screws being used.

In the construction, particularly of the vestibules and doors, important features developed by the Carnegie Steel Company, and not until recently undertaken, are incorporated. In the old methods of constructing vaults, vestibules and doors consisted of a multitude of plates and angles bolted together. Each vestibule of this vault will be made of one solid forging of nickel steel Harveyized armor plate, 115 in. wide, 115 in. high, and 24 in. thick, free of joints, screws or bolts, and each weighing 45 tons. The sides, tops and bottoms of vestibules will be finished to a thickness of 8 in., affording unusual protection against operating upon locking mechanism in the rear of the doors. Each of the outer doors will be 16 in. thick, 91 in. in diameter; each will be one solid forged nickel steel Harveyized armor plate, seamless and screwless, weighing 17 tons, the frames holding the bolting mechanism being a part of the solid forging. These doors will be constructed with devices for defeating the operation of electric burning. They will be fitted with bolting devices of the highest order of mechanism, workmanship and finish, all to be controlled by the most modern combination and quadruple movement time locks. The inside folding doors are also to be solid forged nickel steel armor plate, 4½ in. thick, fitted with heavy bolting mechanism controlled by dial combination locks, and altogether possessing the important advantages of security, whereby different officials of the bank can have control of the different locking systems of the outer and inner doors.

The first floor compartment is arranged with double entrances, principally for the purpose of an emergency, guarding against accidental lockouts. These entrances to the vault will be provided with elevating platforms for the establishment of level floor lines from the banking room with the vaults, for the free passage of gold loaded trucks. The interior of the compartments will be fitted with a large number of safes of the most modern construction, of various sizes, for the different departments of the bank. The vault is to be completed in one year. The accepted designs for the vault were prepared by Geo. L. Damon, vault engineer for the Carnegie Steel Company, who will superintend the construction.

Confidence in the superiority of the solid construction of armor plate vaults is evidenced by the noticeable fact that, in addition to more than 20 vaults of this character throughout the country, the following prominent moneyed institutions have recently placed contracts for such installations: Philadelphia Clearing House, Girard Trust Company, Hamilton Trust Company, Philadelphia, Pa.; American National Bank, Indianapolis, Ind.; Penobscot Safe Deposit Company, Detroit, Mich.; Union National Bank, Commonwealth Trust Company, Pittsburgh, Pa.; Third National Bank, St. Louis, Mo.; Cleveland Trust Company, Cleveland, Ohio; Humboldt Savings Bank, San Francisco, Cal.; Commercial National Bank, Commercial National Safe Deposit Company, Chicago, Ill.; National City Bank, Carnegie Trust Company, New York City.

The Lockhart Iron & Steel Company.—A recent fire at McKees Rocks, Pittsburgh, has caused the report to be widely circulated that the plant of the Lockhart Iron & Steel Company, which is located at that place, has been burned down. We desire to correct this report, as it is utterly untrue, the plant not having been injured in any way by the fire, but on the contrary is in operation to full capacity, turning out a larger product than ever before.

Concerning a publication in the daily press last week giving details of a purported agreement between the United States Steel Corporation and the International Harvester Company, one item being the purchase of all the steel requirements of the latter from the former, President Cyrus H. McCormick of the International Harvester Company has issued the following statement: "The report of a conference between the president of the International Harvester Company and the chairman of the Board of Directors of the United States Steel Corporation, to effect a trade agreement between the two companies, is without any foundation in fact. The publication of such a report is an injustice both to the Harvester Company and to the Steel Corporation. There has been no suggestion of community of interest between the Steel Corporation and the Harvester Company as to the buying of ore, operation of ore steamers, or the handling of foreign trade, as stated in the press report, nor of any other transaction which could give rise to such a report, and no such arrangement is contemplated."

The Humphryes Mfg. Company, Mansfield, Ohio, is now in a position to meet the requirements of manufacturers who are seeking high class brass foundry facilities. The company is prepared to fill orders for brass castings of any composition and for any class of service, as well as bronze, copper or aluminum specialty castings.

The S. Obermeyer Company's Chicago Plant.

The Chicago plant of the S. Obermayer Company is located in that city in the block bounded by West Eighteenth and Rockwell streets, the Pennsylvania Railroad on the east side and the Chicago, Burlington & Quincy Railroad on the south side. The main building, facing Rockwell street, is of brick, contains four stories and a basement and is 100 x 100 ft. in area. A number of smaller buildings are used for the storage of raw material and finished product. An office building, which is a recent addition, is located at the corner of Eighteenth and Rockwell streets, and is a one-story brick building with modern equipment.

The main building is divided by a fire wall, the north half being used for the manufacture of foundry facings and the reduction and refining of plumbago or graphite.

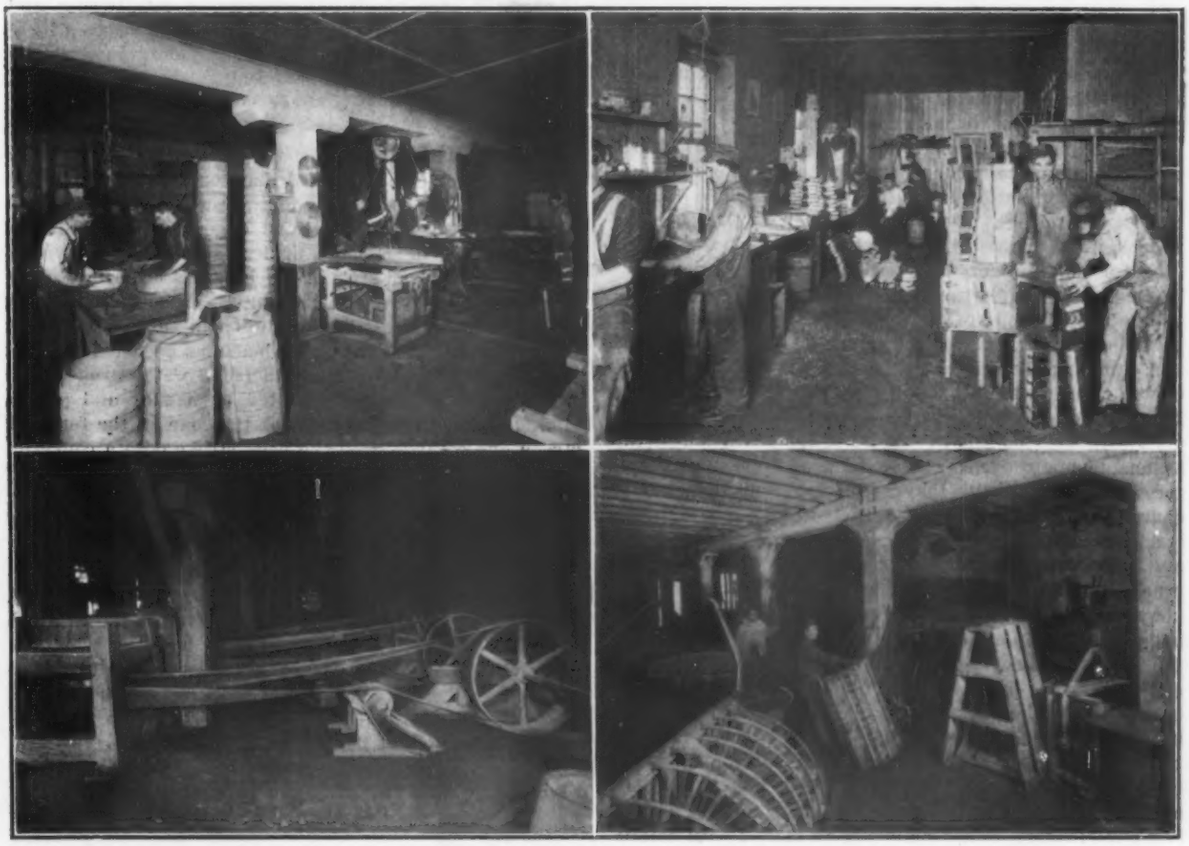


Fig. 1.—Making Riddles—Woodworking Department.
Fig. 2.—Making Flasks—Woodworking Department.
Fig. 3.—One of the Grinding Rooms.
Fig. 4.—One of the Storerooms.

Views in the S. Obermayer Company's Chicago Plant.

In this building there are 10 mills for reducing graphite, the capacity being about 10 tons per day, and in addition a special large mill for the same purpose, employing an air separating process, which reduces the graphite to an impalpable dust. This is probably the largest mill in operation in this country for this work.

In the manufacture of mineral, soapstone and various other kinds of facings special burr mills, emery mills, bolting reels and special conveying machinery are used. A view in one of the grinding rooms is given in Fig. 3. A special building is devoted to the manufacture of sea coal facing, so that none of this facing can in any manner become mixed with the higher grades of plumbago and other foundry facings. This special sea coal plant has a capacity of 50 tons per day, the machinery including a coal dryer built especially for this purpose, the material being conveyed direct from this dryer by elevators and conveyors to the three grinders and from thence conveyed to the packers, which pack the material in bags or barrels, as wanted.

The most remarkable point is that with the present capacity of almost 100 tons of all kinds of facings very little actual labor is required, all the materials being handled by machinery, and that after the crude material once starts into the process it is not handled by men, but by machinery, which conveys the finished product direct into the packages in which it is shipped to foundries for use.

In the wood working department flasks of all kinds, riddles, bellows, floor and bench rammers, brushes, sand sifting machines, tumbling barrels, clamps, &c., are manufactured. It occupies a room 35 x 75 ft. and contains the latest improved machinery for the manufacture of these goods, including lathes, jointers, dovetailing machines, band and circular saws, wood turning lathes, drill presses, punches and shears, and wire cutting and boring machines. Two views in this department, Figs. 1 and 2, show, respectively, the sections where riddles and flasks are made. About 35 men are constantly employed here.

In the fire brick department the buildings are so arranged with track service that one to two million fire brick, cupola blocks, &c., can be stored with but little trouble. Off from this building is another drying house, 25 x 25 ft., where all the crude material is tested and dried before entering into the manufacturing processes. Five or six other buildings are used for storing manufactured and crude material, and all are connected by an industrial railroad system with the various parts of the plant and private switches from both of the adjacent railroads. One of the storerooms is shown in Fig. 4.

Power is developed by a 450-hp. Allis-Chalmers Corliss engine and transmitted to the different parts of the plant by a complete system of rope drives. The power plant is a separate building adjoining the main building.

The company endeavors to manufacture all that is required for foundry use and advertises "Everything you need in your foundry." This, of course, includes not only foundry facings and supplies, but all kinds of equipment, such as tumbling mills, ladles and brass melting furnaces, of which there is a wide variety of different sizes and

shapes held in stock for immediate shipments. The location of the company's three plants for the manufacture and distribution of its products in three of the most important centers of the foundry industry—Cincinnati, Chicago and Pittsburgh—with factories and warehouses of similar kinds at each of these places, enables it to fill almost any order from stock in the warehouse nearest to the customer's foundry.

The S. Obermayer Company is general sales agent for many of the important specialties required by foundries, among them those manufactured by the Whiting Foundry Equipment Company, which it represents in the territory west of and including Pittsburgh.

Beehive Coke Oven Practice.*

Some Features of Construction and Operation.

BY W. M. JUDD.

Water for quenching the coke is supplied by a main, usually 4 in. in diameter, laid in front of the ovens, with a 1-in. connection for attaching a hose for every two ovens. If possible the main in front of the ovens should have tank connections at both ends so as to maintain approximately uniform pressure for the whole line of ovens. These tanks should not be over 50 ft. above the oven seat, as high pressure in the hands of careless or ignorant coke drawers may seriously injure the ovens.

One of the simplest methods of charging the ovens was by the use of drop bottom mine cars, running cars from the mine on a track over the center of the trunnel heads and dumping directly into the ovens. This method of course was limited to a small plant, as several cars were required for a single charge and the time required to shift cars was too great to allow of the extension of the system to many ovens. Some form of larry was therefore adopted originally that would hold sufficient coal to charge a single oven. The drop bottom larry with the track straddling the trunnel heads was the earlier form, and there are some old plants which are still using this type, but the double side discharge larry is almost universally used now. In this form the steel coal holding hopper, with sloping bottom, is set sufficiently high above the tracks to discharge the coal through the adjustable chutes into the oven trunnels on either side, the track being laid at the back of the ovens on bank ovens and between the two rows of ovens on block ovens. The motive power for the larries has been, successively, the mule, the dinkey locomotive and the electric motor. Nearly all the newer plants of any size are using the self-propelling electric larry, either equipping all larries with motors or using some plain larries as trailers.

The Question of Location.

The location of the oven plant as a whole is a question that requires careful study by the engineer. The railroad connections that can be secured and the location of the loading sidings so as to give a grade of 1 to 1½ per cent. for shifting cars by gravity along the ovens must be considered in connection with the position and style of the coal bin adopted and the location that can be secured for the larry track from bin to ovens. While an approximate balancing of excavation and filling is usually attempted, yet there may be economy in quite large waste of excavation, in order to save in the amount of dry masonry required.

For plants not exceeding 100 ovens, bank ovens, or ovens built in a single line against a side hill, are usually the cheapest to build, as they can be located following approximately the contour of the ground so as to secure the most economical adjustment of excavation and masonry. It is not infrequently the case in narrow valleys with steep side hills that nothing but bank ovens can be built except at the expense of excessive excavation and masonry. The drainage both of surface and underground water must be carefully provided for with bank ovens, and quite expensive work is required at times to divert springs which appear as the excavation is carried down.

As 100 ovens in line require approximately 1500 lineal feet of ground, it is easy to be seen that the extension of a line much beyond that limit will run one into difficulties. Even if suitable ground can be secured for a longer line of ovens and for the railroad loading track the additional travel of the larry will cause delay in charging or the use of more larries. Block ovens—that is, ovens built back to back in a double line—occupying less ground and served by a single larry track located on the center line between the two lines of ovens, are therefore better adapted to the larger plants. A very economical arrangement, where the ground is suitable, is the combination of one line of bank and one line of block ovens, one loading track in this case serving for the bank ovens and one side of the block.

With the mine opening and the railroad tracks fixed the engineer may have very little latitude as to the location of the oven plant, but economy in construction and operation of both mines and ovens can be secured by a careful study of both surface and underground topography before locating mine openings, branch railroads and coke ovens.

Coke Drawing Methods.

Any one who has watched the method of drawing coke by hand must have wondered that some mechanical process had not been adopted to do away with such heavy and disagreeable work, and many experiments have been made and machines more or less successful have been built. At least one style of machine has come into quite extensive use in the past year or so, probably to a large extent because ovens already built can be adapted to its use with slight changes. This machine, operated by electric motors, runs on a track in front of the oven doors. A wedge-shaped shovel, operated by a rack and pinion sliding on the oven bottom, lifts the coke on the forward stroke and scrapes it on the back stroke onto a conveyor running parallel with the ovens, and a cross conveyor delivers the coke into railroad cars. This latter conveyor is adjustable so that any hight of car can be loaded. It will be seen, therefore, that at a plant using this type of machine exclusively, if no provision were made for stocking coke, a yard only wide enough for the operation of the machine and practically on the level of the railroad tracks could be used. The safer plan, however, would be to provide some storage for coke, and at least a low yard wall to render the reloading of stock coke less difficult. The only changes in the standard construction to acommodate this machine have been to provide wider doors to the ovens and increase the hight from yard level to oven seat about 1 ft. The wear and tear on the ovens by the machine is quite noticeable, especially the abrasion of the jambs and tile.

The increasing difficulty of securing coke drawers and the decreased cost of mechanical drawing will undoubtedly lead to the wider adoption of coke drawing machines, of the type described above or of some other type, and it would indeed be strange if further modifications of the beehive oven were not made to better adapt it for the use of machines. I cannot state from memory the difference in cost between drawing an oven by hand and drawing it by machine, but the amount of labor required is reduced very materially. The drawing of two ovens is considered a day's work. A machine of the kind referred to will take care of 25 or 30 ovens a day. It requires two men on the machine proper, and usually two men that follow the machine, as it will not draw the coke out of the corners, and a man to wet down the coke ahead of the machine. The machine in use so far has not been in service for many years, and, as is always the case with a new machine, it is developing weak points which are being improved and strengthened from time to time. They are quite expensive to keep up, but there is no question that there is considerable economy in their use. This season, when all the plants were short of coke drawers, has brought a number of operators to the point of putting in machines.

Utilization of Waste Heat.

Even the casual visitor to a coke plant is impressed by the apparent waste in the smoke and flame issuing

* From a paper read before the Structural Section of the Engineers' Society of Western Pennsylvania. Mr. Judd is of the W. G. Wilkins Company, Pittsburgh.

from every trunnel head, and to the engineer this constant loss of energy seems little short of criminal. In the by-product oven the attempt has been made to utilize as large a percentage as possible of the gases and heat given off in the coking process. No discussion can be entered into at this time as to the relative merits of the coke produced by the by-product ovens and the beehive type, or of the practical reasons that have prevented the erection of the by-product ovens at the mines to any large extent. A successful utilization of a portion of the waste heat, however, is now being accomplished at some of the more recently completed plants. This consists in using the waste heat for generating steam in the power plant. The construction adopted up to date has been to connect each oven of a line of bank ovens by a flue with a main flue located at the rear of the ovens, conducting the gases to the boilers. A very effective demonstration of the power wasted by the beehive oven is given at a plant recently completed, where from the waste heat of 50 ovens all the electric power required, both for mining operations and at the coke ovens, for two plants aggregating 800 ovens is being generated at the present time, and at this same plant, within a short time, 100 ovens will furnish the power for the operation of five mines and coke plants, aggregating 1500 ovens. If a market for the power could be secured a further development of the use of waste heat for power purposes would doubtless bring about the making of other changes in the construction of the ovens.

Whether run of mine coal can be charged directly in the ovens, or whether the coal must first be crushed, or whether it must be washed as well as crushed, may have a very material influence upon the location of the ovens and some of the details of their construction.

[The extracts above are from Mr. Judd's paper. Below are given some portions of his comments in the discussion of the paper.—THE EDITOR.]

The Most Effective Size of Ovens.

The ovens have been developing in size. The earlier ovens were 10 ft. 6 in. to 11 ft. in diameter, and were gradually increased until 12 ft. 3 in. was considered standard. Ovens have been built up to 13 ft. in diameter. I think the general opinion now is that 12 ft. 6 in. is about as economical as you can get. It depends a little on the coal you are going to use. With some coals you can use a larger charge and larger ovens than with others. The majority of the new plants I know of have been using a 12 ft. 6 in. oven, about 8 ft. from high tile to trunnel head. In West Virginia two or three ovens were built 20 or 25 ft. in diameter, but I have not heard what results were obtained. The size is somewhat arbitrary. I know of one plant where the ovens are built 13 ft. in diameter, but the experience is that there is no larger yield from these ovens or any better coke than from the 12 ft. 6 in. ovens. There are three plants under one management where they have 12 ft., 12 ft. 6 in. and 13 ft. ovens, respectively, and they have found from experience that the 12 ft. 6 in. ovens give the best results. They secure a very little larger output and the cost of charging and handling the larger amounts is somewhat greater. The distribution of air for burning volatile matter, as the ovens are built with the same size door, is a little different as the oven increases and the hight of the crown is raised, and just the proper relation between the hight of the crown and the diameter of the oven comes into consideration, so that it would require probably quite a series of experiments with any particular diameter to secure the best results. Take the ovens being built for the Frick Coke Company. They have a little lower crown this year, as the company thinks it will get better results out of the oven. I do not know that any of them have been in service yet to see whether there is any material difference. Answering the question as to the availability of a 15-ft. oven, there are difficulties from the construction point of view. If you get much more than 13 ft. 6 in. you get too wide an arch, with more pressure than the brick will stand. Either the oven will be too high or so flat that there will be a tendency to crush in—that is, following the ordinary construction of beehive ovens.

In answer to the question whether if an oven could be built 20 ft. in diameter and properly designed just as good coke could be made in it as in a 12-ft. oven, I should say there might be difficulty in getting the proper distribution of air over the bed of coals. The air as it comes in now passes over the coal and burns the volatile matter and passes out the tunnel hole. Whether with a small door in a 20-ft. oven there would be a tendency to burn better in the center than on the sides and thus not get a uniform quality of coke throughout the oven, I could not say.

The Life of Beehive Ovens.

The life of an oven is extremely variable. Some of them have been 10, 12 and 15 years in service, but they are exceptional cases. Usually an oven requires some little repairs in the course of a year or so. It depends very largely on the quality of brick that goes into it in the first place. The charge for a 12 ft. 6 in. oven on 48-hr. coke is about 6½ to 7 tons. For 72-hr. coke they increase it to 7½ and sometimes as high as 8 tons. The ordinary larry that is used now holds about 200 bushels level full and for a 72-hr. charge it is heaped as high as possible and frequently side boards added.

As to the question whether the coke could not be taken out without quenching it in the oven: Of course the less water that can be put on the coke and yet quench it the better the quality of the coke. But in any case you must put on enough water to extinguish entirely any fire, otherwise your coke will catch fire in a steel rack as well as in a wooden one. It happens once in a while that coke that has not been sufficiently quenched is put in a car and catches fire.

The question of the breaking up of coke is of course one of the strong arguments raised against coke drawing machines. There has not been any machine made yet that does not break up the coke to a greater or lesser extent. It would seem that this is not a very strong point, however, for by the time it is drawn from the oven to the yard and forked from the yard into a barrow, dumped from the barrow into the car and from the car to the yards or bins at the furnace and then reloaded into the furnace skip, it gets to the furnace anything but large coke at best. The furnaces are using coke drawn by machine, and, as I understand, with very fair results. Some of the furnaces used to require that their coke be shipped in box cars or cars with tops. Of course the protection of the coke in transit is an advantage. But for furnace coke the use of cars with tops has been nearly abandoned. The Illinois Steel Company when it first began getting its coke in the Klondike region installed a series of cars with removable roofs, intending to have all the coke covered in transit. Those cars are still in service now, but their roofs are over the bank.

The Electrically Heated Bath for Hardening Tools.—Good results are reported in the use of the electrically heated bath for hardening and tempering steel, described in *The Iron Age* of January 3, 1907. A Sheffield, England, correspondent refers to the experiments of one firm in that district in the treatment of turning tools and milling cutters. The tools, which were made of Rex No. 1 high speed steel, were heated in a bath registering 1400 degrees C., and hardened in a blast, the time in the bath being 1 min. 20 sec. in each case. The feature of the furnace is that, as the electric current passes through the steel the whole piece is brought up to the required temperature quickly and evenly, whereas in other methods care has to be taken that no part of the steel shall be heated too quickly, as this would cause undue stress and consequent distortion of some part. The tools had previously been ground and it was found that the operations of the furnace did not at all impair the cutting edges. Another firm has successfully used the furnace for hardening twist drills and milling cutters. It was found that at temperatures between 1200 degrees C. and 1350 degrees C. the best results were obtained for special self-hardening and high speed steel. The lower temperatures, from 750 to 1000 degrees C., were used for articles made of ordinary tool steel and steel containing a high percentage of carbon.

The Advance in Southern Pig Iron Freights.

The advance of 25 cents a ton on pig iron rates from Southern furnaces to points North, East and West, announced recently, becomes effective February 1. The new rates per gross ton from Birmingham, Anniston and other points in Alabama which take the Birmingham rate are given below to various representative points in different sections:

Addyston, Ohio	$3.25	Hoboken, N. J.	$5.90
Adrian, Mich.	4.50	Hoosick Falls, N. Y.	6.40
Akron, Ohio.	4.35	Lebanon, Pa.	4.95
Allentown, Pa.	5.50	Meriden, Conn.	6.40
Alliance, Ohio.	4.35	Moline, Ill.	4.35
Albany, N. Y.	5.90	Newark, N. J.	4.80
Ashland, Ky.	3.62	New York (rail and water, not including lighterage)	4.25
Atchison, Kan.	4.96	New York (all rail)	5.95
Auburn, N. Y.	5.60	Philadelphia, Pa. (rail and water)	4.00
Aurora, Ill.	4.35	Philadelphia (all rail)	4.75
Batavia, N. Y.	5.30	Pittsburgh, Pa.	4.85
Battle Creek, Mich.	4.60	Pottstown, Pa.	5.05
Bethlehem, Pa.	5.50	Pottsville, Pa.	5.15
Binghamton, N. Y.	5.60	Providence, R. I. (rail and water)	4.60
Boston, Mass. (all rail).	6.40	Providence, R. I. (all rail)	6.40
Boston, Mass. (rail and water)	4.60	Quincy, Ill.	4.25
Bridgeport, Conn.	5.40	Richmond, Ind.	3.90
Canton, Ill.	4.25	Rochester, N. Y.	5.30
Cedar Rapids, Iowa	5.55	Sarnia, Ontario	4.90
Chambersburg, Pa.	4.45	Seneca Falls, N. Y.	5.60
Charleston, W. Va.	4.16	South Norwalk, Conn.	5.40
Chicago, Ill.	4.35	Springfield, Mass.	6.40
Coatesville, Pa.	5.25	Syracuse, N. Y.	5.60
Cincinnati, Ohio.	3.25	Thurlow, Pa.	4.50
Cleveland, Ohio.	4.35	Torrington, Conn.	6.40
Columbus, Ohio.	3.95	Troy, N. Y.	5.90
Dayton, Ohio.	3.70	Utica, N. Y.	5.90
Decatur, Ill.	4.15	Youngstown, Ohio.	4.45
Denver, Colo.	9.56		
Detroit, Mich.	4.50		
East St. Louis, Ill.	3.75		
Harrison, N. J.	4.80		

The usual differentials are provided in the cases of furnaces north of the Birmingham District. While the rate from Birmingham to Chicago, for example, is $4.35, it is $4.10 from Rising Fawn, Ga.; Chattanooga, Tenn.; Florence and Sheffield, Ala., and Bristol, Carnegie, Embreeville and Johnson City, Tenn. From Dayton and Rockwood, Tenn., it is $3.90, and from La Follette, Tenn., and Middlesboro, Ky., $3.60. To Cincinnati, Ohio, while the rate from Birmingham is $3.25, it is $3 from Florence and Sheffield, Ala., and Bristol and common points in Tennessee; $2.75 from Rising Fawn, Ga., and Chattanooga, Tenn., and $2.25 from La Follette and Middlesboro, Ky.

Announcement was made last week of the intention of the officers of the Pennsylvania Railroad to ask the stockholders at their annual meeting on March 12, 1907, to authorize $100,000,000 of new stock and an additional $100,000,000 in bonds. It is believed that before the end of this year enough of the new securities will be offered to supply funds to pay off $50,000,000 of notes which mature in November, 1907; also to meet the cost of this year's work on the New York City terminal, estimated at $20,000,000, and to pay for new equipment and other facilities. In addition to the equipment needs referred to in June, 1906, when the late President Cassatt issued a statement of expected money requirements for the following two years, it is stated that the Pennsylvania Railroad has placed orders for 17,000 steel freight cars at a cost of $19,000,000. The $200,000,000 of new stock and bonds which it is now proposed to authorize would bring the road's authorized capital stock up to $500,000,000 and its bonded indebtedness to $292,000,000. However, the opinion has been expressed that the stockholders will authorize a new issue of convertible bonds and that the $100,000,000 of additional stock proposed will be held to provide for the convertible feature.

Screw spikes are being tried on the Pennsylvania railroads. A steel helix is placed in a threaded hole bored in the tie for each spike, and then the spike is screwed in and its thread cuts into the wood between the steel helix. Flat tie plates without claws and 100-lb. rails are used.

The Kirkwood Fuel Oil Burner.

An Equipment for Open Hearth Steel Furnaces.

In regions remote from coal or natural gas sources open hearth steel melting furnaces provided with proper burners and equipment are afforded a cheaper fuel in oil, and even where the other fuels are available it is frequently found desirable to install an oil burning equipment as a reserve. Such an equipment may be provided which will not interfere in any way with the operation of the furnaces with the regular fuel, and is ready at a moment's notice. Even on an equal competitive basis from the standpoint of cost there are certain advantages

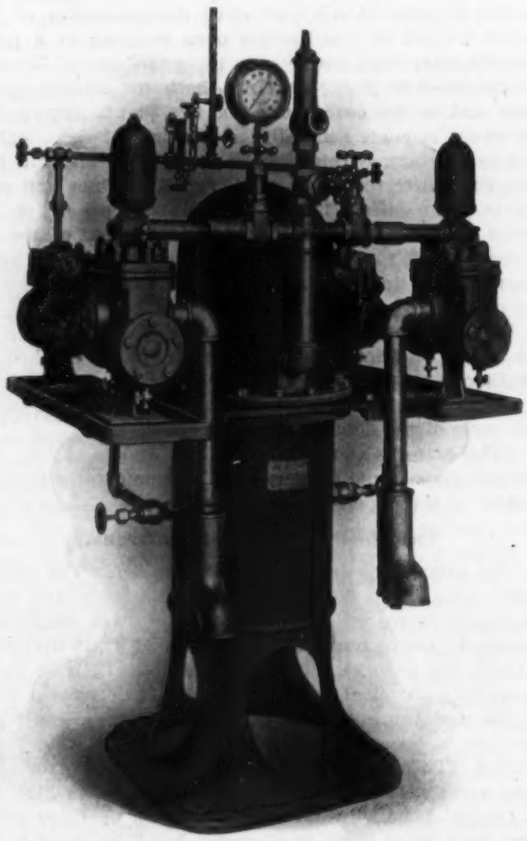


Fig. 1.—The Kirkwood No. 1 Fuel Oil Pumping, Heating and Pressure Regulating System with Two Pumps.

claimed for fuel oil—*e.g.*, the heat of the furnace is more easily regulated than is possible with producer gas; a lower grade of scrap may be used with oil fuel than with producer gas, or with the same grade of scrap castings of better quality are produced; and still a further advantage is that the repairs to furnaces using oil fuel have been found to be very much less than those using producer gas.

Tate, Jones & Co., Incorporated, Pittsburgh, Pa., manufacture such an equipment known as the Kirkwood fuel oil pumping, heating and pressure regulating system, with which is used the Kirkwood oil burner. In addition to the burner the necessary apparatus includes a swinging stand to carry it, the oil pumping and regulating system, piping, valves, &c. The illustrations herewith show these parts and their application to an open hearth furnace.

Two burners are required, one for each end of the furnace, and these being mounted on swinging stands, one burner may be swung out of place and the other in when the furnace is reversed. The burner is of such a design that the supply of oil and compressed air or steam for atomizing is regulated by one lever, the ratio between the atomizing agent and the oil always remaining constant, at what has been found the proper proportion for complete atomization. This adjustment is made before the burner leaves the factory. The necessary valves are provided on the burner stand for cutting off the oil and

the atomizing agent when it is necessary to remove the burner from the stand. The oil and atomizing agent are controlled from the charging floor. When desired an additional attachment is provided, operated by compressed air, with which the burner may be thrown in or out from the charging floor simultaneously with the turning off and on of the oil and air.

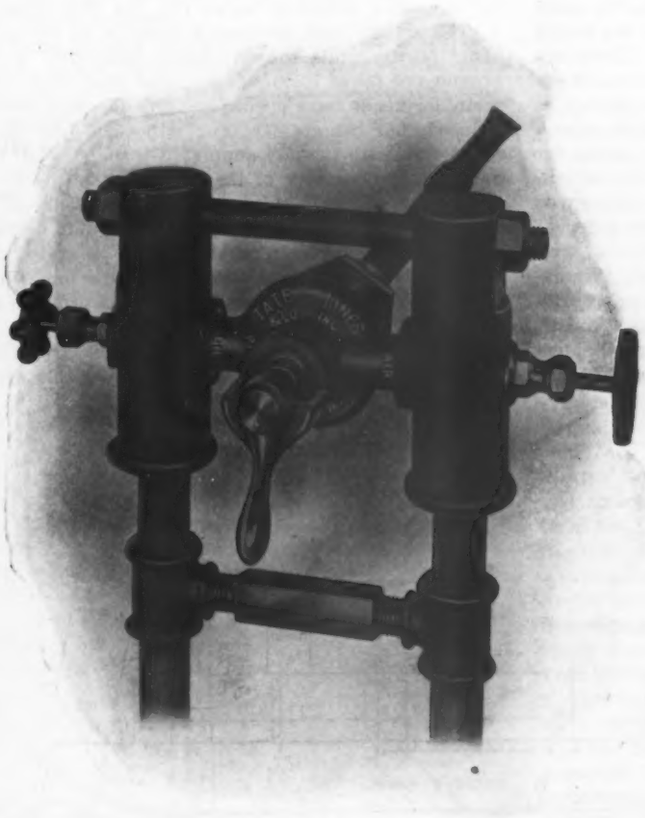


Fig. 2.—The No. 4 Kirkwood Oil Burner, Showing Upper Part of Stand for Open Hearth Furnace.

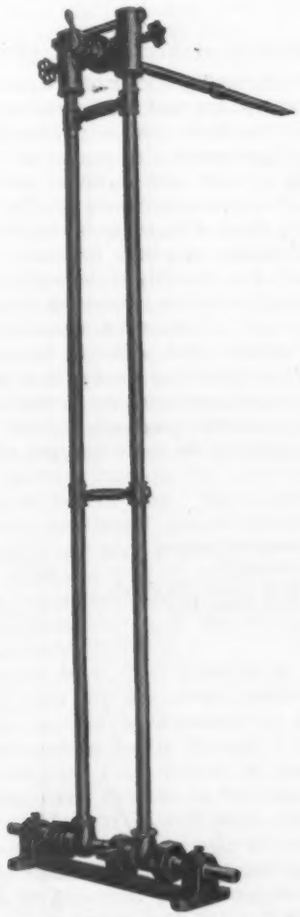


Fig. 3.—Swinging Stand with Burner.

For drawing the oil from the storage tank, straining the foreign matter and lumps from it, and raising the temperature to facilitate atomization, and feeding it to the burners under a uniform pressure, there are needed an oil pumping, heating and regulating system, such as is illustrated in Fig. 1, this being known as the No. 1 system and the one best adapted for furnace work. By this means oil is fed to the burners under a pressure of from 35 to 50 lb., and a small quantity of compressed air or steam for atomizing the oil is supplied at a pressure of from 5 to 10 lb. less than the oil pressure. Either steam or compressed air may be used for the atomizing. The oil lines from the pumping system and the compressed air or steam lines are run to the charging floor, where special controlling valves are provided, and in addition reducing valves are introduced in the air or steam line for cutting the compressor or boiler pressure down as required.

Fig. 2 is a detail showing the No. 4 Kirkwood burner and also the upper part of the stand, which is required for open hearth furnace work. Fig. 3 shows the complete stand as it would be applied to a furnace, and Fig. 4 the application with the burner in operation.

In the No. 1 system, shown in Fig. 1, two pumps are provided. An efficient oil fire can be obtained only when the oil is fed to the furnace at a continuously uniform pressure, when the oil is heated before it enters the furnace, and when it is strained and free from lumps and foreign substances. It is the purpose of this system to accomplish this. The two pumps may be connected up to work together or so that one may be used as a spare or extra pump, giving a duplicate system. The parts are carefully designed to give the most efficient service for their several purposes and to be at the same time simple in construction. In particular this refers to the heating coils, the strainers, the automatic pressure regulators and overflow and the piping arrangement, which must be entirely reliable.

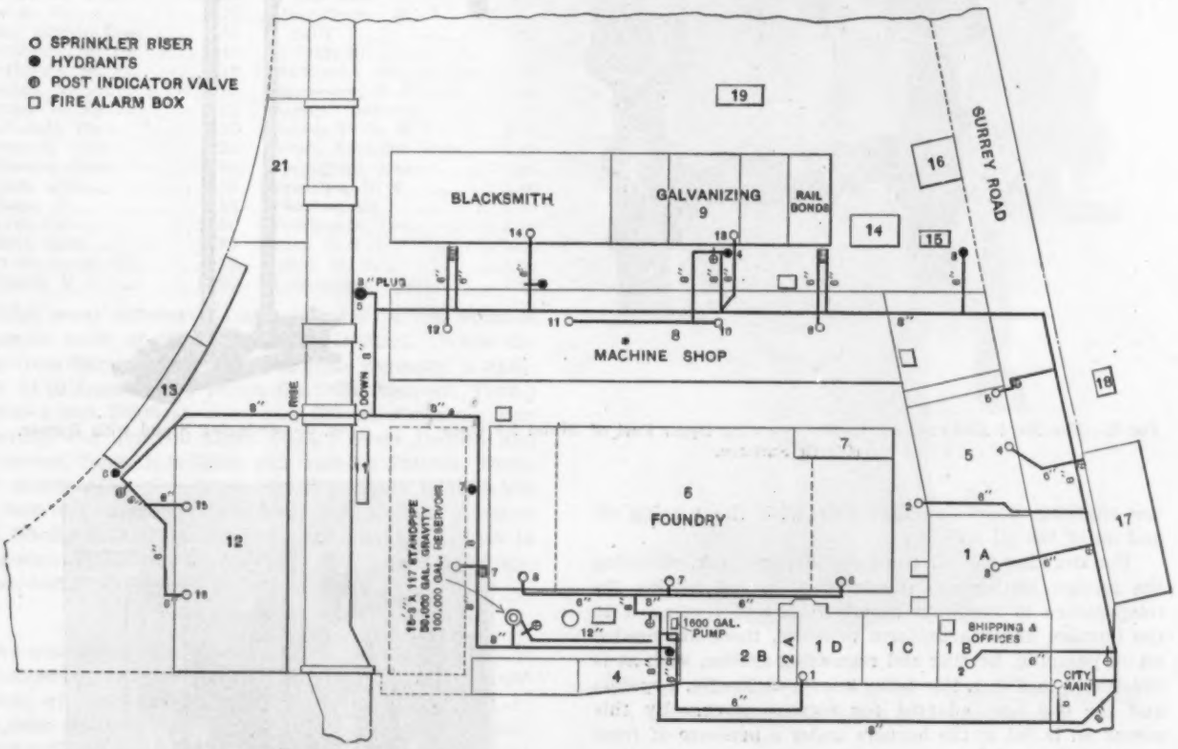
Fig. 4.—One End of a Furnace with Burner in Operation.

Tate, Jones & Co. have had an open hearth furnace equipment of the kind described in operation for over a year, and at the present time there are eight such furnaces in operation, with which the average consumption of oil per net ton of metal charged is claimed to be only from 38 to 42 gal. Four of these equipments are in operation at the General Electric Company's West Lynn, Mass., open hearth department.

Automatic Sprinkler System for Fire Protection.

Equipment at Works of the Ohio Brass Company.

An interesting system of fire protection involving automatic sprinklers and fire hydrants is in use at the works of the Ohio Brass Company, Mansfield, Ohio. There are 16 separate systems of piping in the different buildings serving all told 3500 sprinkler heads, and the system is supplied with water from a gravity tank of 50,000 gallons capacity from a reservoir of 100,000 gallons capacity for use in connection with a fire pump and from service connections with the city water supply system. As regards the piping work an interesting fact is that the different systems are all connected with an underground cast iron main, which makes a circuit around the works, this arrangement providing for the flow of water to any building in opposite directions in the main and thus constituting a provision against accident which might happen to one part of the main and yet not put the system out of service. In the accompanying illustrations are shown a map of the works with the runs of the main piping and main branches underground indicated on it, a plan of piping showing the connections by which the water storage tanks can be filled or emptied, as the case may be. The fact that the Ohio Brass Company makes among other things valves for steam and hot water radiators lends special interest to the account of the company's fire protection systems.



Plan of the Ohio Brass Works, Showing Underground Sprinkler Pipes.

There are three sources of supply, as stated, the gravity tank, the reservoir and the city water supply. The gravity tank takes the form of a stand pipe 15 ft. 3 in. in diameter and 117 ft. high, and this and the reservoir together are located as indicated in the map not far away from the fire pump, which, it may be added, is of 1000 gallons per minute capacity. The idea is that in case of a fire and the sprinklers located at that point open, there will be a pressure and a head of water due to the hight of the gravity tank such that a supply of water will be available until the fire pump can be put in operation. As the city pressure sometimes is higher at the works than that due to the location of the gravity tank, the supply of water in a fire emergency may first come from the city mains, this supply continuing to flow until the city main pressure reduces sufficiently to bring the gravity tank in operation. In order to have this possibility of connection between the city and the gravity tank, the connection from the city main is equipped with a check valve arranged to open toward the works system but against a return of water into the city mains.

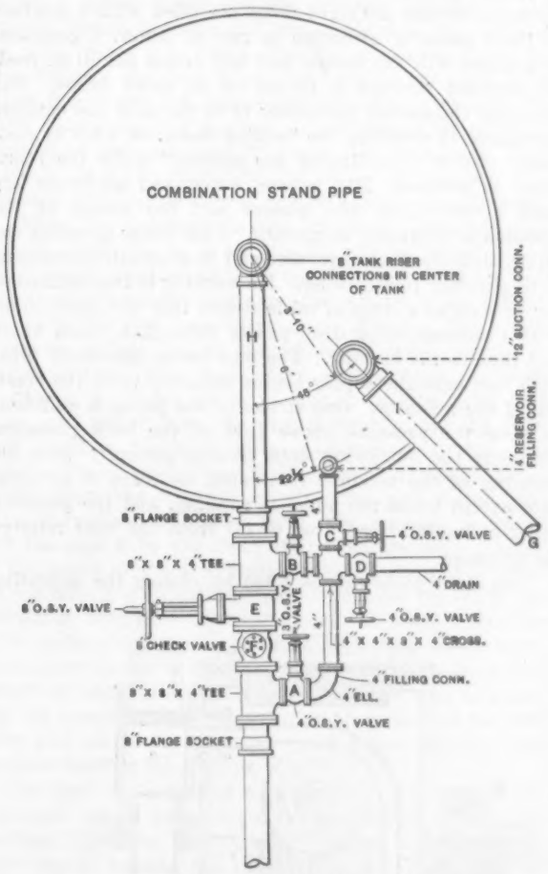
The gravity tank develops a pressure on the system of about 50 lb., while the city water ordinarily supplies a pressure of 60 to 70 lb. It is found that when about 20 sprinkler heads have opened the city pressure becomes so reduced that the gravity tank will come into service in connection with the city supply. On the start of the fire, however, the engineer of the works brings the fire pump into action and with this maintains a pressure of 110 lb. on the water system, the relief at the pump being set to discharge at 110 lb. In passing it may be stated that the engineer is instructed to observe that the pump does not develop a pressure in excess of 110 lb., in order to prevent a waste of water through the relief valve.

The fire pump delivers into the 8-in. circuit or continuous loop main underground and from this are taken the branch mains to each building, this branch in each case being controlled by the so-called post indicator valve and continuing to the sprinkler riser in each case, as indicated in the map. There are 12 post indicator valves for the 16 systems. Besides the branches to the sprinkler systems this main also supplies eight fire hydrants, to seven of which are attached 200 ft. of 2½-in. hose. This is mounted in an adjacent hose house which is supplied in each case with a fire axe and lantern. There are other hydrants distributed about the works, but these are connected with the domestic water supply and would not furnish the pressure available with the fire hydrants. For the purpose of discrimination the fire hydrants are painted red, with white tops, while the hydrants of the domestic supply are painted black. The connection from the city water supply to the 8-in. cast iron loop main is effected through two 6-in. gate valves with a 6-in. check between them, the action of the check being as already stated.

The sprinkler system itself is that known as the International automatic wet pipe system, which means that the pipes are always filled with water to each sprinkler head. The main riser of each system is provided with a

gauge showing the pressure in the pipes. Each riser is provided also with a drain valve, which by shutting off the post indicator valve can be made to drain that part of the system supplied by that particular riser. The sprinkler system on being installed was tested to 175 lb. pressure, while the sprinkler heads themselves were subjected to 500 lb. pressure.

Sprinklers opening at different temperatures are used in different points, according to the nature of the work or occupancy of the different departments, so that they may be opened soon enough to prevent a spread of fire but not so soon as to cause any damage through an unnecessary flooding with water. The brass sprinkler heads are those which open at 165 degrees; the white heads open at 212 degrees; the blue heads at 280 degrees, and the red heads at 360 degrees. There are six fire alarm boxes, as indicated in the map, with two in the office



Pipe Connections at Gravity Tank and Reservoir.

building, one on the first floor in the shipping room and the other on the third floor, and these alarm boxes connect with the city fire stations.

Some interesting figures regarding the operation of the sprinkler heads are that 20 sprinkler heads operating will discharge 1000 gal. of water per minute, which it will be recalled is the capacity of the fire pump, and they will also lower the level in the tank 5½ in. with the city supply cut off. The magnitude of this amount of water is indicated when it is said that four streams of water at 110 lb. pressure will discharge 1000 gal. per minute, lowering the water in the reservoir 5½ in. per minute and taking about three hours to empty the reservoir.

It is of course clear that the gravity tank and reservoir should be kept filled with water at all times and there are gauges at the bottom of the stand pipe to indicate the amount of water in the gravity tank and reservoir, a gauge at the right when indicating 115 ft. showing that the gravity tank is full and a gauge on the left when indicating 75 ft., showing that the reservoir is full. The instructions at the works are that these gauges should be examined by both the engineer and the mechanical engineer of the works once a week, on every Saturday.

The connections at the stand pipe for filling the reservoir and the gravity tank are indicated in one of the accompanying drawings. In this, H is the pipe leading from the tank to the 8-in. cast iron loop main, this delivering water through a check valve, F, which of course is arranged to open in that direction but not to allow a reverse flow of water, as might otherwise be the case, as the city pressure ordinarily exceeds that due to the hight of the tank, and as would be the case whenever the fire pump is in operation, with the result of course that the tank would overflow and waste water. As the tank is filled through pipe H a by pass around the check valve is necessary, and in filling valves A and B are open, C and D of course being closed. The pipe connection by which the reservoir is filled is indicated in the drawing, and it will be seen that to fill the reservoir it is necessary to close valves B and D, opening A and C.

After the reservoir and tank are filled the valves A, B, C and D are of course kept closed, leaving valve E open. Pipe I is a 12-in. suction line from the reservoir to the fire pump and there is a post indicator valve at G for shutting off the water, although this valve should always remain open in order that the fire pump can be put in operation with no loss of time. The engineer in charge of the fire pump and stand pipe is required to make a test of the pump about once a week by starting it and seeing that it is oiled and kept in condition for instant use. A fireman and a night fireman are also made familiar with the apparatus, so that in case of the engineer's absence they can take charge.

To prevent the stand pipe from freezing a 1½-in. live steam pipe runs from the fire pump room to the stand pipe and is coiled several times around the gravity tank and reservoir, exhausting finally through a trap at the bottom of the stand pipe. This system is controlled by a valve in the boiler room and one at the stand pipe and the instruction is to turn it on only when the thermometer is below 25 degrees, and then only at intervals often enough to insure against the water's freezing. The engineer is required to maintain steam constantly at 50 lb. pressure in the steam boiler, both day and night, to be ready for use with the fire pump.

In connection with the fire protection system the leading workmen around the works have been apportioned specific duties. In other words, a works' fire department has been established. The mechanical engineer acts as chief and the foreman of departments as assistants. The hydrants and the hose in connection with them are in charge of a department foreman, and each foreman has six assistants, two hydrant men and four hose men. The works uses a considerable quantity of natural gas for fuel and naturally in case of a fire it is highly desirable to control the flow of gas so far as possible, and the orders are in case of a fire to shut off every gas supply valve except No. 9, which supplies the steam boilers serving the fire pump. When an alarm is turned in it rings a bell in the superintendent's office, in addition to ringing the city alarm, and also one in the engine room, the latter notifying the engineer and fireman, who blow three short blasts on the whistle as a general alarm, shut down the engine, turn on the yard lights if it is night and start the fire pump.

The invention of the taper die for cutting pipe threads is credited by the *Valve World* to P. W. Gates, Sr., of Chicago, at that time conducting a blacksmith shop. The original application was the threading of bolts, which the inventor had found it difficult to cut with a straight thread die. He hit upon the idea of making the die with a taper thread, and it proved so successful that it was speedily taken up by pipe and fittings manufacturers. The threading of pipe in this way has the additional advantage of facilitating the making of a much better joint.

The number of motor cars in France which paid the tax in 1905 was 21,523, with an aggregate of 179,361 hp. Of the total 45,346 hp. belonged to the Department of the Seine, the number of cars being 4627, or an average of nearly 10 hp. per vehicle. In the remaining departments the number of motor cars was 16,896, with a total of 134,015 hp., or an average of about 8 hp.

The Crandall Improved Lubricator.

All high speed machines, and particularly gas and steam engines, such as are used on automobiles and motor boats, which require constant, uniform and positive lubrication, are best served when supplied by mechanical means. An improved form of mechanical lubricator de-

Fig. 1.—The Crandall Improved Mechanical Lubricator, Made by the National Sewing Machine Company, Belvidere, Ill.

signed by J. E. Crandall, and manufactured by the National Sewing Machine Company, Belvidere, Ill., is shown in the accompanying illustrations. The lubricator is made with practically any number of feeds, but is unique in that it uses but one large pump instead of one and sometimes two for each feed. The pump itself requires no adjustment, as it purposely furnishes a greater amount of oil than is used by the feeds, the surplus being allowed to return to the reservoir through a pressure valve which is set and is absolutely positive in its working.

Fig. 1 shows an exterior view of a lubricator with five feeds, where the sight feed tubes are attached directly to the body of the lubricator, or the oil reservoir. In another form the feed tubes and reservoir are separately mounted and may be placed at any distance from each other. This is a very desirable arrangement in many cases and especially on automobiles where the body of the oiler may be put under the hood and the sight feeds located on the dash board. When applied in connection with a stationary engine it might be of advantage to locate the feeds where they could be under the observance of an officer or an attendant at some distance from the engine, where he could see how many drops per minute were being delivered to each cylinder or bearing. Fig. 2 shows two parallel sections of a lubricator of the type shown in Fig. 1, one being taken near one end of the lubricator, and the other at about the center.

The nature of the construction and operation can be readily understood from the sectional views. The pump is driven by a worm and worm gear with a ratio of 30 to 1. The worm or driving shaft passes through the back of the lubricator into a long bearing with a stuffing-box, which, being fastened with a tension screw, *a*, Fig. 2, cannot possibly work loose. When the lubricator is ready to operate the sight feeds are filled with a mixture of three parts of glycerine to two of water, a combination which will not freeze, and will cause the oil in feeding upward through it to cut off in small drops. The company claims this lubricator to be the only one entirely successful in avoiding the backing down, or what is commonly called "clouding of the glasses," while the lubricator is standing idle, where water and glycerine are used in the sight feed glasses and the course of the globules of lubricant is upward. This latter is called the liquid sight feed arrangement and is generally considered to be superior to any other. Its working is instantaneous, for as soon as a drop of oil is forced into the liquid sight feed a corresponding drop passes through a check valve and then to the bearing. The pipe being constantly filled with lubricant the supply begins instantly upon the starting of the machine. One stroke of the pump is sufficient to raise the pressure above that of the back pressure. Similarly the lubricator stops feeding instantly upon the stopping of the machine lubricated, as there is no pressure except when the pump is running, and the pressure being hydrostatic one drop of oil from the case relieves the pressure.

The sight feeds can be filled by closing the adjusting screw valves at the bottom of them and removing the sight feed caps at the top. When filled with the mixture the caps are replaced, and when turned down make a tight joint without the use of gaskets. The lubricator body is filled with any kind of pure mineral lubricating oil, but care should be taken that it contains no animal fat or other foreign matter, such as would tend to clog the feeds, and be apt to corrode the brass of which they are made. The lubricator body is filled by removing a

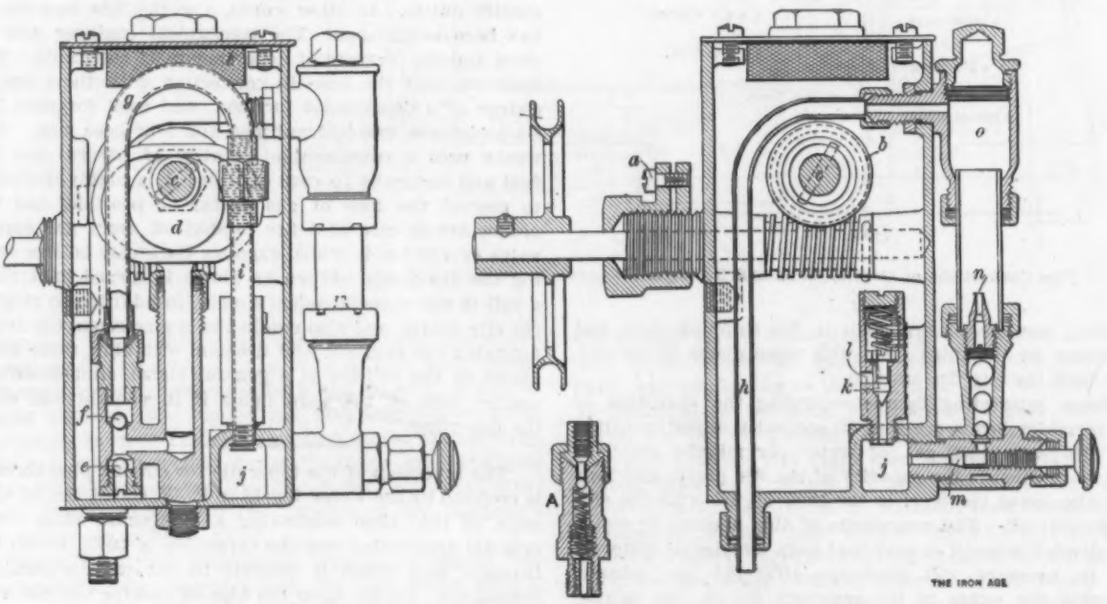


Fig. 2.—Two Sections of the Crandall Lubricator and Detail of a Check Valve for the End of a Feed Tube.

plug in the top, and the oil as it is admitted is strained through a brass wire gauze strainer.

The pump driving shaft may be driven by a flexible shaft, chain, gear, or belt, as happens to be most convenient, and should run at at least 300 rev. per min. The lock packing nut which keeps the lubricant from oozing out around the shaft may be adjusted at any time and locked into position by the screw *a*. Upon the shaft is keyed a steel hardened worm, which engages a hardened worm gear, *b*. This driving shaft operates a pump shaft, *c*, which carries an eccentric cam, for giving the up and down motion to the pump plunger, the stroke being about ⅝ in. The reciprocation of the pump plunger draws oil over the valve, *e*, and forces it up past the upper valve, *f*, as shown in the left hand view, Fig. 2. It passes then through the pipe, *g*, which, rising to a point higher than the outlet of the sight feed tube, eliminates all chance of the oil backing down or siphoning while the pump stands idle. Passing downward through the nipple *i*, the oil enters into the pressure chamber *j*, and when a certain pressure has been created in the chamber the relief valve *k* is lifted, allowing the excess oil to escape through the port *l* into the body of the lubricator. When this excess has been dissipated the spring over the relief valve causes it to close, maintaining a set pressure throughout the time that the pump is in operation. This valve is set when the lubricator leaves the factory, at a pressure of about 60 lb. for gas or gasoline engine work.

When the pressure in the chamber *j* exceeds that against which the oil is fed, the oil will be forced out of the pressure chamber through the outlet to the sight feed tube in amount depending upon the setting of the adjusting screw in each particular tube. Passing the needle valve *m* at the end of the adjusting screw the oil is forced up past three small check valves placed in series to positively insure no back flow from the sight feed tubes, and issues from the drop former *n* into the sight feed liquid in the glass tube. Continuing through this medium the oil enters the liquid reserve chamber *o*, being lighter than the mixture of glycerine and water, and when it reaches the outlet from this chamber is forced into the pipe *h* by the next drop from the drop former. At the outlet of the feed delivery pipe *h* there is a union for connecting it to the pipe used to convey the oil to the bearing or part to be lubricated. At the point where the oil is utilized connection is made through a check valve of the form shown in the detail A, one of these being furnished for each feed. This valve is set to open at about 5-lb. oil pressure, this being sufficient to unseat the ball valve and allow the lubricant to be forced directly into the part needing lubrication.

The oiler being applied to a machine, when the latter is stopped the oil pump stops, the pressure is at once discontinued and the feeding of oil ceases and the check valve closes, holding the pipe full of oil, ready for the next start of the engine or machine to which the lubricator is attached.

The Dominion Iron & Steel Company's claims against the Dominion Coal Company, growing out of the contentions to which publicity was given some time ago, are now stated as follows: For loss of profit on coke and increased cost of its production to November 30, 1906, $400,000; for increased cost of coal bought from outside sources, $68,580. In addition the iron company asks that the value of the 90-year contract to the steel company be assessed at $15,000,000. The total amount of damages asked is, therefore, $15,468,580.

The citizens of Niagara Falls, N. Y., are considering plans for an electrical exposition to be held in the summer of 1908. The Board of Trade and the several power companies have taken hold of the project. Committees have been appointed and steps will be taken to incorporate an exposition company. The Canadian city of Niagara Falls will be asked to co-operate so that comprehensive plans may be carried out for the electrical illumination of the entire district surrounding the Falls, including the gorge and whirlpool, on a scale of grandeur and impressiveness in electrical effects never before dreamed of.

Trolley Building in Pennsylvania.

HARRISBURG, PA., January 10, 1907.—Considerable interest has been aroused in trolley building circles and among State officials by the extensive building of trolley lines which is forecasted by the issuance of charters for electric railroads. In the year just closed there were no less than 95 charters issued to companies intending to construct systems, the aggregate being hundreds of miles. Applications have been made for charters for nearly 20 more, and they will be laid before the Governor this month.

One of the most interesting trolley developments noted in a long time is the authorization of the merger as a Pennsylvania corporation of the Buffalo & Lake Erie Traction Company and the Erie Rapid Transit Company under the name of the former. The Erie Company was a Pennsylvania corporation, and the other chartered in New York. Their combined capital is $6,750,000. This company is designed to build a line from Buffalo to Erie, it is understood, and it will include the system in Erie, Pa. Ultimately there will be a stretch of trolleys from Buffalo to Cleveland. Another development of interest in that part of the State was the recent merger of the Bradford, Pa., and Olean, N. Y., trolley systems.

There are applications for five street railroad charters for Lawrence County, chiefly about New Castle. Two have recently been incorporated by the Rigg interests for Wilkes-Barre, and the same people are asking a charter for a company to be known as the Twelfth and Thirteenth Streets Company in Reading. Charters have also been asked for lines to run from West Pittston to Exeter in Luzerne County, and in Snyder County the Selins Grove & Freeburg Company is to build and operate. The recent incorporation of the Hanover & York Street Railway means the building of several lines in York County and the connection of the two places by a line next year. Interests connected with the Cumberland Valley Railroad have asked a charter for the Caledonia Street Railway, which is to run from the property of Thaddeus Stevens on the Adams-Franklin County line to Gettysburg.

Chambersburg, Greencastle and Scotland are to be connected in Franklin, and in a short time surveys will be made for a line to run west from Chambersburg. A charter has been asked for the Big Valley Street Railway Company, to build a line 27 miles long in Huntingdon and Juniata counties, while charters have been issued for two companies to build in Huntingdon near the county seat. The Ledrachsville & Pennsburg will connect two towns in a rich district in Montgomery County, and there will also be extensions of lines in and about Shamokin in Northumberland. In addition, there will be several lines in Washington, Westmoreland and Fayette counties, the West Penn interests being behind several projects.

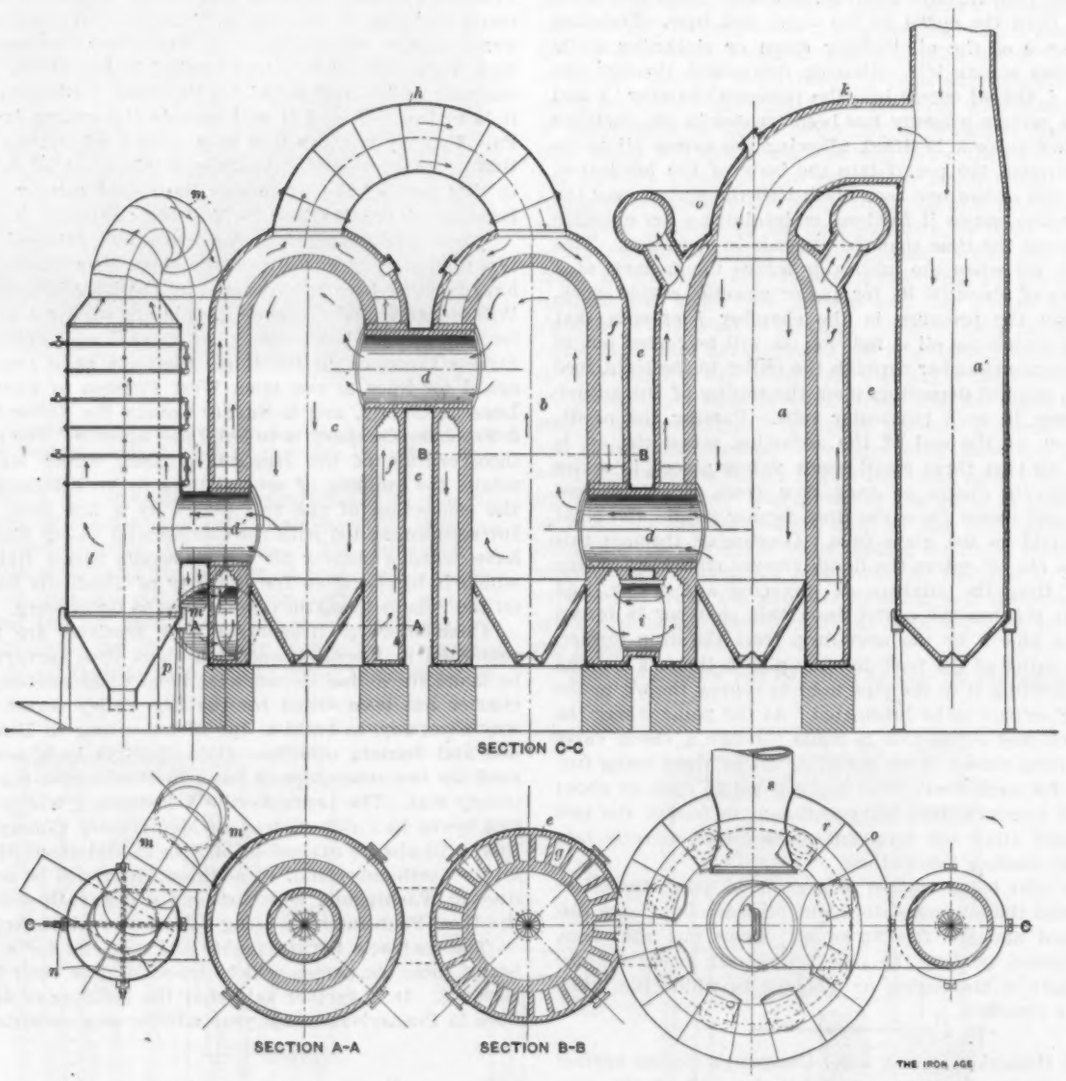
The contracts for the plants and material for a number of these companies will be let soon after their incorporation. It is further said that the building of trolley lines in Pennsylvania this year will be unprecedented.

SHARON, PA., January 10, 1907.—During the year 1907 electric railroad construction promises to be exceedingly active in the region between Cleveland and Pittsburgh, especially in the Shenango Valley. The Cleveland & Sharon Traction Company, with a capital of $2,500,000, proposes to complete a line, already partly constructed, from Middlefield, Ohio, to Sharon, Pa., thus giving direct service from Cleveland to Sharon, in connection with the Cleveland & Eastern Railway. The Pittsburgh, Harmony & Butler electric line has purchased a terminal building near the center of New Castle, and a plan is said to be under way to connect it with the New Castle & New Wilmington Railway, which is to be extended to Sharon and thus make a direct line between Pittsburgh and Cleveland. Interests friendly to the Mahoning & Shenango Traction Company have secured an Ohio charter to construct a line to connect the Cleveland city railroads with the Mahoning Valley lines, and an effort is being made to get rights of way for lines to connect the Mahoning Valley, Beaver Valley and Pittsburgh city railroads.

Blast Furnace Gas Washer and Reheater.

Gas washing is now more commonly practiced at blast furnaces in view of the distinct economies realized from the more complete removal of flue dust than is possible by the use of a simple dust catcher. But gas washing involves the cooling of the gas and the introduction of a certain amount of moisture, which being carried into the stoves does damage to brickwork in addition to the lowering of the heats obtained. Moreover, cold gas does not give as good results under boilers. A solution of the problem of gas washing and reheating has been reached by D. Lamond & Son, Pittsburgh, Pa., by the use of a combined washing and regenerating device. In brief the apparatus provides for utilizing the heat radiated from the unwashed gas in reheating the gas after it is purified and before it passes to the stove or boilers. Three stove-like settling chambers, *a*, *b* and *c*, are connected in series by horizontal pipes, *d*, one higher than the other, so as to make a circuitous passage of the gas. The settling chambers have the common bell and hopper bottom construction for accumulating and dropping into cars such portion of the ore and coke dust as separates by gravity from the gas. Each of the settling chambers is surrounded and inclosed by an outer wall *e*, separated sufficiently from the inner chamber wall to form a flue *f*. The lower portion of the cavity or flue is horizontally continuous, while the upper portion is of the vertical flue or checker formation, as shown in *g* in the accompanying illustration. The upper ends of the spaces *f* surrounding the settling chambers *b* and *c* are connected by an elbow *h*, while the lower ends surrounding the chambers *a* and *b* are connected by the duct *i*. The upper portion of the initial chamber *a* is connected by a pipe *k* with the dust catcher *a'*. The chamber *c* is connected by the duct *d'* with the lower portion of the upright gas washer *l*, and the upper end of the latter is connected by a vertical pipe *m* with the lower end of the cavity *f*, surrounding the chamber *c*.

The blast furnace gas passes directly from the dust catcher into the upper end of the first chamber and thence successively through the pipes *d* into the chambers *b* and *c*. The gas expands in passing through these chambers and the heat is absorbed by the walls, thus bringing the temperature in the flues *f* practically to that of the gas



Sectional and Plan Views of the Lamond Blast Furnace Gas Washer and Reheater.

as it leaves the blast furnace. The passage of the gas through the settling chambers is comparatively slow, so that it has ample time to give off its heat and release the heavier impurities, which collect in the hopper bottom. In its upward passage through the washer *l* the gas encounters sprays of water discharged from transverse perforated pipes *n* and thus the remaining lighter impurities are removed. Cleaned and cooled gas passes from the washer downward through the pipe *m* and into the lower end of the space surrounding the chamber *c*. The pipe *m* expands below its connection *m'* with the space surrounding the chamber, as indicated at *p*, and forms a trap for collecting moisture carried over from the washer.

Passing upward through the space *f* and through the elbow *h* the gas enters the space surrounding the chamber *b* and thence through the duct *i* into the space sur-

rounding the chamber *a*, its course thus being the reverse of that followed as it passes through the purifying apparatus. The temperature of the gas when it enters the bustle pipe *o* at the upper end of the chamber *a* is approximately that of the impure gas entering that chamber from the dust catcher. The bustle pipe has a series of connections *r*, through which the gas enters, and the pipe conveys the gas to the boiler or to the hot blast stove.

In cases where the gas may be sufficiently purified by its passage through the settling chambers the inventors would eliminate the washer and connect the outer chamber *o* directly with the flue *f*. A saving of fuel and an increase in the production of iron are claimed for the apparatus, since the cleaning and reheating of the gas contribute to high heats and do away with the cleaning of the stoves for the removal of accumulated dust.

Measuring Fitness for Promotion.

BY JOSEPH LEON GOBEILLE, PHILADELPHIA.

In the United States are literally thousands of openings for assistant superintendents, foremen, assistant foremen and gang bosses, especially in Eastern and Southern mills and shops. These places pay from $1000 to $3600 a year, and besides the salary often carry with them very agreeable emoluments, such as private office, stenographer, messenger, personal lockers, special conveniences, &c.

Heads of industrial establishments, superintendents of works and managers of shops generally cry out for competent men to fill choice positions, but cannot find them, or, having located a promising man, cannot identify and prove him except by "trying out," an expensive and unscientific method. On the other hand, almost every ambitious workman desires and looks forward to such a job, as witness the multitudes who are putting money and every spare moment into the correspondence school courses.

How to bring the competent artisan and the good place together—that is the question. By what markings shall the proprietary interests recognize ripe but virgin talent? And how shall the competent mechanic know to a surety that he is "fit"—a potential man of affairs and a successful manager of men in embryo?

As apprentice, journeyman, foreman, general superintendent, partner, sole proprietor and president of a large corporation in sequence, then on the toboggan slide to common workman, and now back up again, same road, as far as superintendent, I believe I am competent to solve this problem and to put before both the parties in interest a simple table or formula which will show almost exactly whether any certain man will be likely to make good in any such given place. The ingredients of my recipe and their proper admixture permit both employer and applicant to figure out just where they are at, merely by striking an average:

TABLE.

80 *points required to pass.*

(*a*) Practical knowledge of the trade, including ability to plan original work and to lay down necessary drawings.	25
(*b*) Executive ability and initiative	20
(*c*) Abstinence from rum, beer and cigarettes	15
(*d*) Punctuality and prompt action	10
(*e*) General information and versatility	10
(*f*) Under 40 years of age	10
(*g*) American nationality	5
(*h*) Affiliation with some church	5
Total	100

By this allotment some good men will naturally be penalized, but it amounts only to a handicap—*e.g.*, when "f" and "g" negative together in one chart, or when, as is very likely to occur, "c" and "h" coincide against a man. Yet even these extreme cases do not spell actual prohibition, as perfection in the other items will net the necessary 80 per cent.

A tip to journeyman mechanics: Clip this, make up your own case correctly and send it as a credential with your application for the position you covet. If honestly checked you will probably get the job, and barring accidents you will surely keep it, provided, of course, your total goes to 80 or more.

Employers of skilled labor, for their part, should use this formula to check up men already in their shops. There may be some unrecognized talent now employed, and in applying this test to the present executive force it may be found that there are now in power men who should be reduced to the ranks and more capable men substituted. From personal observation and actual data carefully noted for more than 20 years past, I sincerely believe that this nomenclature and division of qualities is sufficiently accurate to be used as a measure by both sides and elastic enough to keep out only those men who would have but small chance of making good if put in places of authority as corporals or lieutenants of industry.

An Electrically Driven Sheet Mill.

The sheet mill of the Redheugh Sheet Iron & Steel Company, Limited, Newcastle-on-Tyne, England, has been equipped recently for electrical driving, the new installation replacing a single cylinder condensing steam engine. There are three stands of rolls—bar, roughing and finishing rolls—and the product is sheets of 9 to 18 gauge. Heretofore the rolls have run at 32 rev. per min., but with electrical driving this will be increased to 38 rev. per min. The higher speed, combined with rolls 1 or 1½ in. larger, will give a considerable increase in the output of the mill. London *Engineering* gives the following details of the new installation:

The electrical equipment consists of two three-phase induction motors of the slip ring type, with a normal capacity of 350 and 25 hp., respectively, and all necessary control apparatus. The larger motor will drive by ropes a 14-ton flywheel, this being connected by reducing gear to the mill shaft. To control this motor a large liquid regulating resistance is being provided. This is contained in two tanks, the mixture being kept in a state of constant circulation, and cooled by a coil of piping directly connected to the town's water supply. To obtain full advantage of the flywheel energy the control gear of the motor will be so arranged that a proportion of the resistance will be left permanently in series with the rotor, in order to give a suitable slip. The slip will be adjusted to suit the peaks of the load, and so permit the flywheel to supply the energy for these peaks, thus effecting economy in current consumption. The 25-hp. motor is for running at low speed, as during the weekly turning up of the rolls, when a speed of ½ rev. per min. is required. A low speed is also necessary between heats to enable the rolls to cool evenly; otherwise the chill would be destroyed. This motor will be mounted at right angles to the main mill motor and will drive by a worm and worm wheel through the shaft of the large motor. A special free wheel clutch will be fitted between the shafts to enable the auxiliary motor to take up the load at the correct speed, after the main motor has been switched off—that is to say, the main motor will start the rolls up and, when at full speed, will be shut down, and the other motor at once started up. Thus, when the speed of the rolls has dropped to the correct low speed, the clutch will be put in and the auxiliary motor will take up the load.

Frank P. Allen, Jr., architect and engineer, has been appointed director of works of the Alaska-Yukon-Pacific Exposition, which will be held at Seattle, Wash., in the summer of 1909. Mr. Allen gained his exposition experience at the Lewis and Clark Exposition at Portland in 1905, where he had charge of the structural work. He is manager of the General Engineering & Construction Company of Seattle and Portland. The exposition grounds cover 250 acres of the unused portion of the campus of the University of Washington, and border for more than a mile and a half on Lake Washington and Lake Union. Twelve large buildings will form the nucleus of the exposition. Work on the grounds has already begun under the direction of Mr. Allen.

The coal producers of the Orient are India and Japan. The coal fields of Japan are actively worked, but India's are only partially developed.

Horsepower Transmissible by Manila Ropes.

BY FRANK WACKERMANN.

Following are notes as used by the transmission department of the Jones & Laughlin Steel Company, Pittsburgh, Pa., giving the horsepower that may be transmitted by manila ropes:

tension of the slack rope equal to one-half the tension of the driving rope and considering the tension caused by centrifugal force, then the effective pull of the rope $= \frac{2}{3}(T - C)$; the centrifugal tension $C = \frac{Wv^2}{32.16}$ (v = the velocity in feet per second); the weight of the rope per foot $W = 0.34D^2$; and $Hp. = \frac{2}{3}(T - C)\frac{v}{550}$. $Hp. = 0$ when

Speed of rope in ft. per minute	Horsepower Transmitted Hp — Diameter of Rope										Tension on Slack Rope — Diameter of Rope										Speed of rope in ft per second V
	⅜"	½"	⅝"	¾"	⅞"	1"	1¼"	1½"	1¾"	2"	⅜"	½"	⅝"	¾"	⅞"	1"	1¼"	1½"	1¾"	2"	
100	.06	10	16	23	.31	40	.63	91	1.21	1.62	9.38	16.67	26.05	37 51	51.06	66 69	104.20	150.04	204 23	266.74	1 67
200	11	.20	.32	45	.62	81	1 26	1.82	2.47	3.23	9.39	16.69	26.07	37.54	51 10	66 74	104 29	150 18	204 41	266.98	3 33
300	17	.30	47	68	93	1 21	1.89	2.72	3.71	4 84	9 40	16.71	26.11	37 60	51.18	66.84	104.44	150.40	204 71	267 37	5 00
400	23	40	63	91	1 23	1.62	2.52	3.63	4.94	6 45	9 42	16 74	26.16	37.68	51 28	66.98	104 66	150 70	205 13	267 92	6.67
500	28	.50	79	1.13	1.54	2.01	3.15	4.53	6.17	8.05	9.44	16.79	26.23	37.78	51.42	67.16	104.93	151 10	205.67	268.63	8.33
600	34	60	94	1.36	1.85	2 41	3 77	5 43	7.39	9 65	9 47	16.84	26.32	37.90	51 58	67.37	105.27	151 59	206 33	269 49	10.00
700	39	70	1 10	1 58	2.15	2.81	4.39	6 32	8 60	11 23	9 51	16 91	26.42	38.04	51.78	67 63	105.67	152.16	207 10	270.50	11.67
800	45	80	1 25	1.80	2.45	3 20	5.00	7 20	9 81	12 81	9 55	16.98	26.53	38.20	52.00	67.92	106.12	152.82	208 00	271 68	13 33
900	51	90	1 40	2 02	2 75	3.59	5.61	8 08	11.00	14 37	9.60	17.06	26.66	38.39	52 26	68.25	106.64	153.57	209.02	273.01	15 00
1000	.56	1.00	1.56	2 24	3.05	3 98	6.22	8.96	12.19	15.92	9.65	17.16	26.81	38.60	52.54	68.63	107.23	154.41	210.16	274.50	16.67
1100	61	1.09	1 71	2.46	3.34	4.37	6.82	9 82	13.37	17 46	9 71	17.26	26.97	38.83	52.86	69 04	107.88	155.33	211 39	276 14	18.33
1200	.67	1.19	1.85	2.67	3.63	4 75	7 42	10.68	14.54	18.97	9.77	17.37	27 14	39.09	53.20	69.49	108.57	156 34	212 80	277 94	20.00
1300	.72	1 28	2.00	2.88	3.92	5 12	8 00	11 53	15 69	20.49	9.84	17 49	27 33	39.36	53.57	69.98	109.34	157.45	214 30	279.90	21.67
1400	.77	1.37	2.15	3.09	4.21	5 49	8.58	12.36	16.82	21.98	9 91	17 63	27.54	39 66	53.98	70.50	110 16	158.63	215 92	282.05	23 33
1500	.82	1.47	2.29	3.30	4.49	5.86	9 16	13 19	17 95	23.44	9.99	17 77	27.76	39.98	54.41	71.07	111.05	159.91	217.66	284.29	25.00
1600	.87	1 56	2 43	3 50	4 76	6 22	9 72	14 00	19 05	24 89	10 08	17.92	28.00	40.32	54.88	71.68	112.00	161 28	219 52	286.72	26 67
1700	.92	1.65	2 57	3 70	5 04	6.58	10.28	14 78	20 14	26.31	10 17	18.08	28.25	40 68	55.37	72.32	113.01	162.73	221.50	289 30	28.33
1800	.97	1 73	2.71	3 90	5.30	6.93	10 82	15.59	21 21	27.71	10.27	18.25	28.52	41 07	55.90	73.01	114 08	164 27	223 59	292.04	30.00
1900	1.02	1 82	2.84	4.09	5.57	7 27	11 36	16.36	22.26	29.08	10.37	18.43	28.80	41 48	56.45	73 73	115.21	165.90	225.81	294 94	31.67
2000	1.07	1.90	2.97	4.28	5.82	7.61	11.89	17 11	23.29	30 42	10.48	18.63	29 10	41.91	57.04	74.50	116.40	167.62	228.15	297.99	33.33
2200	1 16	2 06	3 23	4 65	6 32	8 26	12 90	18 58	25 29	33.03	10 71	19.04	29 74	42.83	58.30	76.14	118.97	171.32	233.19	304.57	36.67
2400	1.25	2 22	3 47	4 99	6 80	8 88	13 87	19 97	27 19	35.51	10.96	19.49	30 45	43 84	59.68	77 94	121 79	175.37	238.70	311.78	40.00
2600	1.33	2.37	3 67	5 32	7 24	9 46	14.79	21 29	28.98	37.85	11 24	19.98	31 21	44 94	61 17	79.90	124.85	179.78	245.70	319.61	43.33
2800	1.41	2 50	3 91	5 63	7 66	10.01	15.64	22.52	30 66	40 04	11 53	20 50	32.04	46.13	62.79	82.02	128.15	184.54	251 17	328.06	46.67
3000	1.48	2.63	4 11	5 92	8.05	10.52	16 44	23.67	32.22	42 08	11.85	21.07	32.92	47.41	64.53	84.29	131.70	189.65	258.13	337 15	50.00
3200	1.54	2.75	4.29	6 18	8.41	10 99	17 17	24 72	33 64	43.94	12.19	21.68	33 87	48 78	66.39	86.72	135.49	195 11	265.56	346.86	53.33
3400	1.60	2.85	4 46	6 41	8.73	11 41	17 82	25 66	34.93	45.62	12 56	22.32	34.88	50.23	68.37	89.30	139.53	200.92	273 48	357 19	56.67
3600	1.66	2.94	4 60	6.62	9 02	11 78	18 40	26 50	36 07	47 11	12.94	23.01	35.95	51 77	70 47	92.04	143.81	207 09	281 87	368 16	60 00
3800	1.70	3.02	4.73	6.81	9.26	12 10	18 90	27 22	37.05	48.39	13.35	23.74	37.09	53 40	72.69	94.94	148.34	213.61	290.75	379 75	63.33
4000	1.74	3.09	4.83	6.96	9.47	12.37	19.32	27.82	37.87	49.46	13.78	24.50	38.28	55.12	75.03	97.99	153.11	220.48	300.10	391.97	66.76
4200	1.77	3.14	4 91	7 07	9.63	12.57	19 65	28 29	38.51	50.30	14.23	25.30	39 53	56.93	77 48	101.20	158.13	227 71	309.93	404.80	70 00
4400	1.79	3.18	4 97	7 16	9 74	12.72	19.88	28 63	38.97	50 90	14.71	26.14	40 85	58.82	80.06	104.57	163.39	235.28	320.25	417 90	73.33
4600	1.80	3.20	5 00	7 21	9 81	12.81	20.02	28.83	39.23	51.25	15.20	27.02	42 22	60 80	82.76	108.09	168.90	243.21	331.04	432.37	76.67
4800	1.80	3.21	5.01	7.22	9.83	12.83	20.05	28.87	39.30	51.33	15.72	27.94	43 66	62.87	85 58	111.78	174.65	251.49	342.30	447.10	80.00
5000	1.80	3.20	4.99	7.19	9.79	12.79	19.98	28.77	39.12	51.14	16.26	28.90	45 16	65 03	88.52	115.61	180.65	260.13	354.06	462.45	83.33
5200	1.78	3.17	4.95	7 13	9 70	12.67	19.78	28.50	38.80	50.67	16.82	29.90	46.72	67 28	91 57	119.61	186.89	269.11	366.29	478.42	86.67
5400	1.75	3.12	4.87	7.02	9.55	12.48	19.49	28.07	38.21	49.91	17.40	30.94	48 34	69 61	94.75	123.76	193.40	278.45	379.01	495.03	90.00
5600	1 72	3.05	4.77	6 87	9.35	12.21	19.07	27 47	37.39	48.83	18.01	32.02	50.03	72 04	98.05	128.08	200.10	288.15	392.19	512.25	93.33
5800	1.67	2.96	4.63	6 67	9.08	11.86	18.53	26.68	36.32	47.44	18.64	33.13	51 77	74.55	101.47	132.53	207.07	298.19	405.87	530 11	96.67
6000	1.61	2.86	4.46	6.43	8.75	11.43	17.86	25.71	35.00	45.71	19.29	34.29	53.57	77.15	105.00	137.15	214.29	308.58	420.01	548.59	100.00
6200	1.53	2.73	4.26	6.14	8.35	10.91	17.05	24.55	33.42	43.64	19.96	35.48	55.44	79 74	108.66	141.93	221.76	319.00	434.65	567.70	103.33
6400	1.44	2.58	4.03	5.80	7.89	10.31	16.10	23.19	31.56	41.23	20.68	36.71	57 37	82.61	112.44	146.86	229.47	330.43	449.75	587.43	106.67
6600	1.35	2.40	3.75	5 41	7.36	9.61	15.02	21.62	29.43	38 44	21.37	37.99	59.36	85.47	116.34	151.95	237.42	341.89	465.34	607.79	110.00
6800	1.24	2.21	3.45	4.96	6.75	8.82	13.78	19.85	27.01	35.28	22 11	39.30	61.40	88.42	120.36	157.19	245.62	353.69	481.41	628.78	113.33
7000	1.12	1.98	3.10	4.46	6.07	7.93	12.40	17.85	24.30	31.74	22.87	40 65	63.52	91.46	124.49	162.60	254.06	365.85	497.96	650.39	116.67
7200	.97	1.74	2.71	3.91	5.32	6.95	10.86	15.63	21.28	27.58	23.65	42.04	65.69	94.59	128.75	168.16	262.75	378.36	514.99	672.64	120.00
7400	.82	1.46	2.29	3.30	4.49	5.86	9.15	13.18	17.94	23.43	24.45	43.47	67.92	97.81	133.12	173.87	271.68	391.22	532.49	695.51	123.33
7600	.66	1.17	1.82	2.62	3.57	4.66	7.29	10.49	14.28	18.66	25.28	44.94	70.21	101 11	137.62	179.75	280.86	404.44	550.48	719.00	126.67
7800	.47	.84	1 34	1.89	2.57	3.36	5.25	7.56	10.30	13.45	26.13	46.45	72.57	104.50	142.24	185.78	290.28	418.00	568.94	743.11	130.00
8000	.27	.49	76	1.10	1.49	1 95	3.04	4.38	5.97	7.79	27.00	47.99	74.99	107.98	146.98	191.97	299.95	431.93	587.89	767.90	133.33
8200	.06	.11	13	.24	.32	42	.65	94	1.29	1.68	27.89	49.58	77.46	111.55	151 84	198.31	309.86	446.19	607.33	793.23	136.67
8252.49	0	0	0	0	0	0	0	0	0	0	28.13	50.00	78.13	112.50	153.13	200.00	312.50	450.00	612.50	800.00	137.54

The breaking strength of manila transmission rope equals approximately 7000 D^2 (D being the diameter of the rope), and the principal manufacturers agree that the maximum allowable working tension, T, should not exceed 200 D^2 for permanent drives. From this data and assuming the arc of contact to be 180 degrees or over, the $C = T$, or at a speed of 8252.49 ft. per minute. Tension t on slack rope necessary to transmit the full power $= \frac{1}{3}(T - C) + C$. The smallest practicable diameter of sheave $= 42D$.

The accompanying table gives the horsepower trans-

mitted by manila ropes, considering the effects of centrifugal force, so that the tension is constant at all speeds, and the tension on the slack side.

The horsepower table has been carried to O to show more clearly that nothing can be gained by using higher speeds than 4800 ft. per minute, unless the maximum allowable working tension is increased above $200D^2$, which reduces the life of the rope.

For horizontal drives and when transmitting full power the sag of the driving rope at all speeds $= \frac{WL^2}{8T}$ and of the slack rope $\frac{WL^2}{8t}$ (see table for t). When at rest the sag of both ropes $= \frac{3}{16}\frac{WL^2}{T}$ (L = the distance between the two points of suspension.)

For continuous drives the tension weight when transmitting full power $= 2t$; this, however, is not strictly correct, as it varies with the angle of the grooves on the sheave, the length of the rope and the general arrangement of the drive. It should be determined separately for each case, and should be just sufficient to prevent the rope from slipping.

The Woodstock Iron & Steel Corporation.

The purchasers of the Woodstock Iron Company at Anniston, Ala., are making every effort to get the property in shape to begin operations at the earliest possible moment. The smaller stack is being relined and will be ready to go in blast about March 1. It has a daily capacity of 225 tons. As soon as this is in blast work will be begun on the larger furnace, which will receive a general overhauling, with a number of changes which it is expected will largely increase its efficiency. New blowing engines will be installed and the plant modernized. When both stacks are in operation the daily output will be 600 tons of foundry iron. The company has no intention of making steel at this time, as has been reported, but will devote its entire energies to keeping the Woodstock brand of foundry iron up to its former reputation. The iron from these furnaces is made largely from brown ore and has long been a favorite with foundries throughout the country.

The coal mines will be developed to their fullest extent and are now being rehabilitated, the equipment being carefully gone over, and the most improved machinery installed where necessary to replace any. The ore mines are being overhauled with a view of bringing them up to the highest efficiency, and will all be ready for operation by the time the furnace is ready for the torch.

The mineral lands of the company consist of 8200 acres of coking coal, on which there are estimated to be 65,000,000 tons of coal. The brown ore acreage is about 35,000 acres, containing about 40,000,000 tons, and 8000 acres of red ore, having about 30,000,000 tons. The ore holdings are now being thoroughly prospected with a view to large developments.

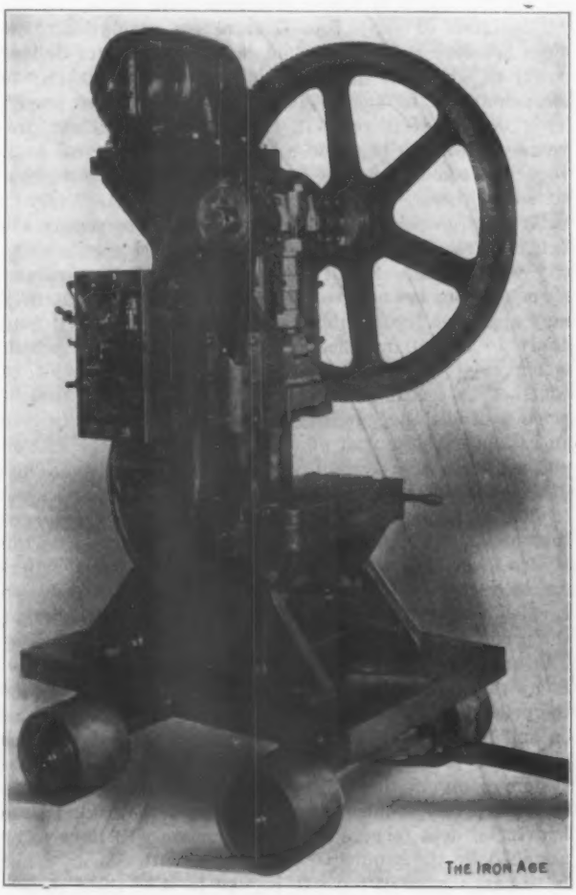
The officers of the company are: J. M. Barr, president and treasurer; J. B. Carrington, vice-president and general manager; A. W. Wagner, secretary; Henry T. De Bardeleben, manager of furnaces and ore mines; F. G. Morris, manager of coal mines; J. W. Porter, auditor, and C. A. Carpenter, purchasing agent. For the present the general offices of the company will be in the Woodward Building, Birmingham, Ala.

The Youngstown Sheet & Tube Company.—At a meeting of the stockholders of this company, held at Youngstown, Ohio, January 10, the directors were authorized to proceed with the building of two blast furnaces, the capital stock being increased from $4,000,000 to $6,000,000. It was left optional with the directors to sell as much of the increased stock as they may think necessary. It is expected that contracts for the furnaces will soon be placed. The statement that the Youngstown Sheet & Tube Company had made an arrangement with the Ohio Iron & Steel Company, Lowellville, for a supply of hot metal is incorrect.

A Bliss Portable Trimming Press.

When there is occasion to make small forgings in a drop forge shop not specially equipped for such work it is not often advantageous to put small trimming dies in a large trimming press, nor would it pay to have a small trimming press beside each drop hammer. Appreciating this fact, the E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y., has just completed and built the portable machine illustrated in the accompanying engraving, which is designed for just such contingencies. It is entirely self-contained, being direct driven by a 2-hp. electric motor, with the starting box, switch, &c., all fastened to the side of the press at a convenient hight for the operator.

The press is mounted on a truck and is equipped with



A Portable Small Trimming Press Built by the E. W. Bliss Company, Brooklyn, N. Y.

sufficient wire and connecting plug so that it can be readily moved to any location and started immediately, irrespective of line shafts and without the loss of time incident to finding and fitting a belt. A machine of this character must of necessity be operated in an aisle, but to occupy as little floor space as possible the motor was placed at the top of the machine, and to avoid injuring any one accidentally running into it, or damaging the machine by collision with a heavy object the truck was made large enough so that the machine does not overhang at any point. The total floor space occupied by the truck is 39 x 45 in., the total hight is 84 in. and the total weight, including the truck, is 3000 lb. The press is controlled by a Bliss positive clutch operated by a hand lever.

The American Sheet & Tin Plate Company, Pittsburgh, Pa., is making a leader in its present advertising of its booklet on the processes employed in the manufacture of tin plate, entitled "From Underfoot to Overhead." This publication comprises 62 pages, and is well written, beautifully printed and splendidly illustrated. Those who desire to read a most interesting account of the methods of manufacturing tin plate should apply to the company for a copy of it.

Canada's Niagara Power.

Public Control in Ontario.

TORONTO, January 12, 1907.—Of the topics of the day Niagara power ranks with the foremost in public interest. Several conditions combine to force it upon popular attention. An act passed at the last session of the Ontario Legislature extended Government control over the trade in hydro-electric power much further than it had ever gone before. By this measure a new tribunal was instituted called the

Hydro-Electric Power Commission.

This body, one of whose members must be a Minister of the Crown, has practically unreserved domestic jurisdiction in regard to power produced from waters on the public lands or subject to Government regulation. Besides creating the commission and enabling it to deliver power in wholesale quantities, the act gives authority to municipalities to engage in the distribution of power. That is to say, it vests in two public parties not previously known in the power business, the right to intervene between the private producer and the private consumer of power.

If a large power company is prepared to supply the lighting, traction and manufacturing interests of a given city with all the electricity required for their uses, and if such consumers believe the price asked is too high, they may appeal to the Municipal Council. In its turn it may apply to the Hydro-Electric Power Commission, which is supposed to be ready to undertake two things: 1, A contract to transmit to the municipality at the lowest price quotable the quantity of power needed; 2, to give an estimate of the cost of constructing a storage station and a distributing system within the municipality. Thus if the manufacturers and other consumers do not choose to deal with private producers of power, they may get their demand supplied through the municipality and the Hydro-Electric Power Commission. The commission has ample authority to do whatever is required in order to furnish power to municipalities. It may buy power at the producing works of a private company and may enter into an agreement with a private transmission company. If by this method it cannot have the power provided at the price decided by its experts to be equitable, it may go on and build a transmission line, may build development works, or it may expropriate an existing transmission system or an existing generating plant, or both. If it has to construct or acquire works of either or both kinds, the Provincial debt incurred for this purpose will have to be assumed by the municipalities served with power. That is to say, they will have to engage to take their respective quotas of power throughout the period of the debt at a price that will provide for the maintenance and operation of the plant and for the payment of the debt charges. Hence, the first thing that is necessary is to get a sufficient number of municipalities committed to warrant the commission acquiring or constructing works or bargaining for the output of private works and the service of private lines.

Municipalities Uniting for Power Purposes.

Efforts have been made to associate the required number of municipalities in such a demand, and they are likely to be crowned with success. Adam Beck, chairman of the commission, has lately delivered addresses in the leading towns and cities of western Ontario, which includes the greater part of the province subtended by Lake Erie and Lake Ontario as far east as the city of Toronto. These municipalities have formed an organization, a committee of which has drafted a by-law to be passed by their respective Councils and submitted to the property owning citizens for ratification. This by-law provides that the municipal corporation may enter into a 30-year contract for a quantity of electric power varying in the case of each municipality, at a price, also varying in the case of each municipality. On this by-law the ratepayers of Toronto voted on the 1st inst., and carried it by a majority of 8000. The price named in the by-law $14 to $16 per 24-hr. hp. delivered at a substation near the city's limits, and the quantity is 15,000 hp. Toronto's example is expected to influence the other towns and cities of what is known as the Niagara District, to whose ratepayers the by-law is to be referred. After the Hydro-Electric Power Commission has secured these guarantees of support it will probably require each of the towns and cities to proceed without delay to have similarly adopted the several by-laws authorizing their Councils to provide local storage and distributing plants. It will doubtless then take measure to deliver the power called for by the contracts.

What these measures will be is a matter of concern to the companies that have established power works on the Ontario side of Niagara Falls, and of special concern to the Ontario Electric Development Company, whose transmission line now extends from its generating plant at the Falls, through the intervening towns and cities, to its substation in Toronto. Will the commission expropriate that transmission line, or will it built a line of its own? Will it buy power from this company, whose chiefs and headquarters are in Toronto, or will it deal with that company's rival, the Ontario Power Company of Niagara Falls? Whatever it does, it is certain to wipe out a great margin of the profits that were promised to investors in Niagara power companies.

While cheap power, thus to be diffused through the mediation of the Government's commission and through the utilization of the municipalities' credit, will doubtless greatly stimulate manufacturing enterprise in almost a score of Ontario towns and cities, the interference with the business of the private power companies, that obtained their concessions from the Ontario Government, will be repellant to capital, of which, above all things, Ontario and all Canada are in need. The British bondholders of the companies affected by the Ontario Government's power policy will not be easily heartened to make any more ventures on the stability of laws or Governments here.

The Export Market.

At the moment when the home market for their output is being deprived of its attractions the power companies on the Ontario bank of the Niagara are encountered by restrictions in the market which was formerly open on the American side of that stream. These restrictions are applied by the Federal authority of the two countries controlling the Niagara. The Burton act, passed at the last session of Congress, limits the quantity of power that may be imported, and it looks as if the company that seems likely to fare hardest under the new Ontario law will be the one most adversely affected by the Burton act. At all events, the people who are proffering advice to the American Secretary of War recommend that his permits be confined to those Canadian companies that are controlled by American capital.

It is now announced that the Dominion Government will without delay introduce a bill to limit the exportation of power. An export duty is to be imposed upon every unit of power transmitted out of the country without a license. It is not expected that this law will press heavily on the companies at the outset, its declared object being to insure that the needs of Canadian power consumers shall be adequately provided for. As the immediate needs signified by Canadian consumers do not amount to very much, it is to be supposed that the licenses at first issued will give the companies all the latitude they desire. It has been suggested that this measure may serve as an offset to any discrimination shown in the operation of the Burton act. That is to say, if the permits issued under the Burton act are confined to Canadian companies controlled by American citizens the licenses issued under the Canadian act might be restricted to those companies in which Americans have not the upper hand. It is not likely, however, that a game of cross purposes will be played between Washington and Ottawa. The Laurier Government will not be inclined to aim its prohibitive export duty particularly at the companies holding Secretary Taft's permits. In fact there is reason to believe that that Government expects the labors of the International Waterways Commission to end in the conclusion of a treaty for the joint regulation of the Niagara and other boundary streams.

C. A. C. J.

Drawbacks Paid in 1906.

WASHINGTON, D. C., January 15, 1907.—The export movement of manufactures with benefit of drawback barely held its own in the fiscal year 1906, according to the annual report of the Bureau of Statistics of the Department of Commerce and Labor, which has just been completed. The total amount paid in drawbacks during the year was $5,831,124, as compared with $5,806,475 in 1905, an insignificant gain of less than one-half of 1 per cent. In the same period the total exports of manufactures rose from $543,620,297 to $603,227,836, a gain of $59,607,539, or 11 per cent.

The failure of the exports with benefit of drawback to show even a proportionate increase in 1906, in spite of the extraordinary efforts made by manufacturers to secure practicable regulations and of the Treasury Department to provide them, is believed by customs experts to be due to two causes, first, the heavy domestic demand for products formerly exported; and, second, the unwarranted expense incident to complying with the drawback statute as to certain other classes of goods. A third consideration, not without weight, although applying to only a single item, is the fact that exporters of petroleum in 1906 found it to their advantage to use considerable quantities of domestic tin plates with benefit of the unofficial drawback allowed by the American manufacturers in place of importing Welsh plates. Of course, these facts in no way discredit the drawback principle, but rather serve to demonstrate its value as an aid to the extension of foreign trade during periods of domestic depression. Incidentally, the testimony of manufacturers who, after considerable experience, have found the cost of meeting the Treasury Department's requirements to fully offset the refunds received, emphasizes the importance of the early modification of the existing law and regulations.

The very careful study given by the Treasury experts in 1905 to the requirements of manufacturers of steel rails, structural iron and steel, locomotives, &c., who desired to increase their foreign shipments with benefit of drawback, is reflected in large increases in these items in 1906. In fact the metal schedule, exclusive of tin cans, shows a large aggregate gain in the amount of drawbacks paid, as will be seen from the following table showing the refunds of each class of metal products in 1906 as compared with 1905:

Drawbacks on Metal Products.

	1906.	1905.
Aluminum	$44,534	$46,958
Cars, railroad	30,746	11
Electric cable	22,413	28,827
Electric instruments	7,492	3,558
Bar iron and steel	314	181
Castings	1,274	111
Billets, ingots and blooms	23,733	57,747
Car wheels	....	1,101
Embossed iron	....	495
Forgings, bolts, nuts and spikes	5,791	13,327
Steel hoops	34	319
Locomotives	106,444	48,980
Boilers	1,330	635
Parts of engines	1,805	4,675
All other machinery	14,767	29,201
Nails and spikes	18,722	15,641
Pipes and fittings	65,818	4,779
Steel rails	204,418	132,558
Saws and saw plates	2,172	1,971
Steel plates and sheets	2,139	1,667
Structural iron and steel	191,832	96,189
Wire and manufactures of	9,567	36,066
All other manufactures of iron and steel	8,117	28,322
Pig lead	2,227	1,164
Lead pipe	2,447	5,513
Lead sheets and shot	35,954	49,110
All other manufactures of lead	11,929	8,191
Metals not otherwise specified	12,192	10,077
Tin cans	1,808,956	2,273,240
Other tin manufactures	37,112	44,230

The overshadowing importance of the drawbacks paid on tin cans with reference to the total refunds under the law is apparent from the above table. In 1905 they amounted to 38 per cent. of the total and in 1906 to 30 per cent. In 1905, however, the refunds on tin cans were unusually large, amounting to $2,273,240, as compared with $1,808,956 in 1906 and $1,646,263 in 1904. In 1905 nearly all the so-called "case" oil was shipped in boxes made from imported plates, while in both 1904 and 1906 considerable domestic plate was used, which was supplied by American manufacturers, with the benefit of an unofficial drawback nearly equal to the 99 per cent. of the duty which the Government refunds. The drawbacks paid in 1905 covered 78,570,000 cans, as compared with 74,000,000 in 1906. A comparatively small proportion of this quantity in both years was used for other purposes than as petroleum containers.

The largest increase noted in the metal schedule in 1906 was in exports of structural iron and steel. This item was chiefly bridge material, the Treasury Department having devised a very complete system of identification, under which several large manufacturing concerns have been able to secure drawback of duty paid on iron ore, pig iron, ingots, blooms, slabs, billets, &c. The rail mills have also profited by the drawback law, and in 1906 increased the amount of refunds received from $132,558 to $204,418. The locomotive manufacturers have also developed, with the aid of the customs authorities, a very complete drawback system, and hardly a month passes that some new item employed in the construction of a locomotive is not added to the drawback list. The steady growth in this direction is shown by the statistics of the past three years, the refunds having risen from $36,812 in 1904 to $106,444 in 1906.

Drawbacks Compared with Exports.

The total drawbacks paid during the past eight years as compared with contemporaneous exports of manufactures are shown in the following table:

Fiscal year.	Drawbacks paid.	Total exports of manufactures.
1899	$3,793,885	$339,592,146
1900	5,430,397	432,284,366
1901	5,215,502	412,155,066
1902	4,947,662	403,890,763
1903	5,058,862	407,526,159
1904	4,809,808	452,445,629
1905	5,806,475	543,620,297
1906	5,831,124	603,229,836

The most striking feature of the above table is the small ratio of the drawbacks paid in 1906 to the total exports of manufactures in that year as compared with the figures of 1900. It will be noted, however, that since the last mentioned year the drawbacks paid have declined very materially, reaching low water mark in 1904, since when a marked increase has been recorded.

Movement to Liberalize Law.

It is not surprising, in view of the importance of the legislation already accomplished by the Fifty-ninth Congress, that certain measures of great value to the business community, among them the proposed liberalization of the drawback laws, should have been postponed for future consideration. A composite bill is now on the calendar of the Committee on Ways and Means, providing for the allowance of drawback claims in cases where the technical requirements of the term "manufacture," as construed by the United States Supreme Court, cannot fully be met, allowing claims on the substitution principle, where the foreign material in the finished product is not capable of identification, but where evidence is adduced that at least an equal quantity has actually been imported and traced to the manufacturer's plant; permitting goods to be consumed on shipboard with benefit of drawback; allowing rebate of internal revenue tax on goods withdrawn from bonded warehouses and used on shipboard, and permitting drawbacks to be paid on imported coverings used on exported American goods.

Action by Congress on these measures has been strongly urged, but the movement has encountered the opposition of the so-called "stand-pat" element of both House and Senate, which seems incapable of distinguishing between the revision of the tariff rates and the passage of more liberal drawback laws, the enactment of which would unquestionably have done much to relieve the pressure for tariff revision. It can hardly be more than a matter of a comparatively short time, however, before these measures will be forced to the front. W. L. C.

THE IRON AGE

1855—1907.

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DAVID WILLIAMS COMPANY, - - - - - - - PUBLISHER
CHARLES KIRCHHOFF, - - - - - - - - } EDITORS
GEO. W. COPE, - - - - - - - - - } EDITORS
A. I. FINDLEY, - - - - - - - - - }
RICHARD R. WILLIAMS, - - - - - - - - HARDWARE EDITOR

The Status of Steel Billets.

From the amount of comment called out by the fact that $30 a ton has been asked on one or two small lots of steel rails the development might be considered of special significance. It is true that two Pennsylvania rail mills which have their rail capacity for 1907 practically sold up have decided to ask $30 for what further business they can take on. But what is of interest in this connection is not that rails have advanced, for other mills are still asking $28 for Bessemer rails, but that the demand for steel billets is such that more money can be realized by the mills in selling the less finished product. Having taken care of their regular rail customers for 1907, it is not surprising that some of them are making use of the exceptional opportunity in the semi-finished steel market.

The chart issued as a supplement to *The Iron Age* of January 10 showed graphically the relation between the prices for steel billets and those for steel rails in 1906 and the eight years preceding. In August of last year the price of Bessemer billets at Pittsburgh overhauled the $28 mill price of rails and by the close of the year was $1.50 above that figure. This is the fourth time in ten years that the billet price line has crossed that of steel rails. In two preceding instances the higher price of billets was maintained for a period of months. In April, 1899, when the boom of that year was well under way, the average prices of billets and steel rails coincided at $25.37, the former having advanced quite steadily from an average of $15.06, Pittsburgh, in the month of November, 1898. By a steep curve the ascent proceeded until an average of $38.75 was reached in October, 1899, while rails, by a slightly more gradual ascent, reached $35, the maximum of the movement, in November. In December billets had receded to $33.75, while rails remained at $35. The higher price of semi-finished steel had thus been maintained for seven months. For the single month of February, 1900, billets were again higher than rails, the month's averages being $34.87 and $34.25, respectively. But in March, 1900, the order was reversed, with billets at $33 and rails at $35, and for 23 months the normal relation of the two was maintained. In April, 1901, rails were established at $28 and have now held that price steadily for five years and nine months. Billets declined month by month from the February, 1900, average of $34.87, to $16.50 in October of the same year, and then began a rise which in February, 1902, just two years after the previous contact of the price lines, carried the billet line across the $28 rail parallel. The ascendancy of billets was retained for 17 months, or until July, 1903. Then for three years and one month the steel line pursued its devious way below the $28 line, for a considerable part of 1904 holding a straight course on the $23 level established by the billet association.

For more than six years, or since the fall of 1900, when $26 was fixed as the association price for rails, that product has been kept on a basis which, apart from the slump of 1904, either put it in natural regimen with semi-finished steel or held it on a lower basis than would have been established in the market had rail manufacturers allowed free operation of the law of supply and demand. Considering the prices of the past year in other rail making countries, it would not have been difficult to obtain $35 for domestic rails under the conditions that have affected all iron and steel products in this country.

The chief matter of interest, however, in considering the course of the billet market in recent years is the relation between the price of semi-finished steel and the general basis for finished material. Naturally the aim of the large steel companies is to turn a maximum percentage of their steel into finished forms. They have the equipment and the selling organizations and ordinarily the largest profit is to be realized by the largest employment of labor and machinery upon the steel. To sell it in a half finished state is only one or two steps beyond the marketing of pig iron as such. The conditions under which it would be profitable to accept prompt billet business—such as those that have prevailed in recent months—are the very conditions that would be expected to narrow the market for half finished steel. A high price for billets and a pegged price for finished products is far from attractive to the finishing mill that must buy its steel in the market. Moreover, the large producer, with varied lines of finished product, and making constant effort to extend its trade, is more and more under the necessity of treating its blast furnaces and steel works as purely tributary to its rolling mills. If it enters into contracts to supply billets or sheet bars and finds at length that these are simply a handicap upon its main effort it is apt to think twice before committing itself to a renewal of such contracts on a large scale. In the past year, as is well known, the large steel companies, even though cutting down and prorating shipments to their billet and sheet bar customers, have been losers on such business, since the entire tonnage, and more, could have been marketed in final forms at higher than billet contract prices.

On the other hand, there are times when specifications do not come in in volume sufficient to employ finishing capacity, and if steel works are to be run economically there will be a surplus of billets for the market. Since it is not to be expected that rod, bar, sheet and tin plate mills with no connected steel works will trust to the chance of getting the mere overflow of the large steel works, contract arrangements for longer or shorter terms have been made from time to time. It has come about that the dependence of small finishing mills on their large competitors has not been complete. In the past half dozen years, or ever since the formation of the Steel Corporation, most of the time it has happened that some new Bessemer or open hearth plant has been in position to take on business for billets and sheet bars, pending the completion of rolling mills, or, after their completion, pending the development of its business in finished material, to the point of requiring all the output of its converters or melting furnaces. Thus Sharon, Clairton, Denora, Youngstown, Indiana Harbor and Staten Island plants have in turn been a source of supply, and a Buffalo plant now building may for a time perform the same function. Efforts have been made at times by a group of sheet bar consumers to combine in providing a permanent source of steel supply, but thus far without result.

The plain tendency of the years of consolidations has been toward the elimination of the billet as a market

commodity, except for such uses—forgings, for example—as do not bring the buyer into competition with the seller. Yet it would be unsafe to predict the disappearance of the steel mill as a purveyor to small rolling mills. Logically, a merchant furnace interest, controlling an ore supply sufficient for a long term of years, would be in the best position to extend itself to fill the breach, especially if the large steel companies should build enough blast furnaces to be practically independent of the merchant furnace.

The Movement of Gold and of Merchandise.

The excess of gold imports in the calendar year 1906, assuming December to show no movement, is $103,075,889, the largest in the history of the United States, barring only the year 1898, when the excess of imports was $141,968,998. This is strange news of a period which has been followed by very low bank reserves, high money rates and a number of other disquieting symptoms.

The movement of gold does not follow the movement of merchandise—which is hard on the theory. Other things being equal, the international balance of trade would, of course, have to be settled in gold; but other things are not equal, and, indeed, are so disturbing as to completely obliterate any trace of a permanent connection between gold and merchandise. Taking statistics from 1867 to the present, the following is observed: To and including 1873 each year showed excesses of merchandise imports and gold exports; thereafter was a period, to 1882, in which merchandise exports rose and then fell, while almost concurrently gold imports rose and then fell. To 1882, therefore, it appeared that the international balance of trade was being settled in gold without serious complication. After 1882 merchandise exports again rose, but gold merely fluctuated around the zero line. In 1887 gold imports exceeded merchandise exports and in the following year merchandise imports exceeded gold exports; the lines, hitherto moving parallel, had crossed. Between 1890 and 1895 was a period of fairly heavy favorable balance of trade, but gold exports were in excess; the lines had widely diverged. After the poor merchandise exports in the single year 1895 the favorable balance of trade in merchandise suddenly became heavy and stayed so, but there were heavy gold imports only in the years 1898 and 1906.

The fact that the balance of trade is always favorable by a much greater extent than the imports of gold has often been explained, and quite naturally, because it is an inviting field to explain something which requires explanation on account of being insusceptible of actual proof. The familiar explanation includes under and over valuations, freight paid to owners of foreign bottoms, money spent abroad by American tourists, interest and dividends paid to foreign holders of American securities, the movement of the securities themselves, &c. The explanation covers the ground, but that ground is so large that details would be very acceptable. Through the years 1880-1895, with all their fluctuations and cross currents, the difference between gold imports and merchandise exports, having regard to sign, averaged, not so very irregularly, about $100,000,000 per year.

Beginning with 1896 a great change occurred, altering completely the relation between the balance of trade and gold movement. In 1896 the balance of trade made a new record, passing by a quarter million dollars an old high point, made away back in 1878. In 1898 and 1900 fresh high points were made, at double the amount in 1878. The gold movement did not respond, except that in 1898 and last year there were heavy imports. In the 10 years from 1896 to 1905, inclusive, the average favorable balance of trade was $475,000,000 per year, a point not touched in any year prior to 1896, as the previous record year, 1878, showed only $300,000,000. No year between 1881 and 1906 touched $150,000,000. The sweeping nature of the change to an average of $475,000,000 for the 10 years ending with 1905 is therefore apparent. In the same 10 years the net imports of gold averaged only $20,000,000, leaving a balance of trade, unsettled in this way, of $455,000,000 per year. The amount was fairly uniform during the period, the minimum being $383,000,000 in 1902, and the maximum $636,000,000, in 1900.

Now comes 1906, with 11 months showing a favorable balance of trade of $421,553,030, and net gold imports of $103,075,889, leaving a balance of trade, not settled by gold imports, of $318,477,141, or at the rate of about $350,000,000 for a calendar year, against an average in the previous 10 years of $455,000,000, and a minimum during those years of $383,000,000.

There are two points to be noted in particular: first, that in the 10 years, 1896 to 1905, there was an enormous increase in our favorable balance of trade not settled with gold, the increase averaging for the 10 years over a quarter billion dollars per year; second, that in the first 11 months of 1906 there have been net gold imports of $103,000,000, against an average of $20,000,000 per year in the previous 10 years.

It is evident that in the 10-year period observed above there must have been an enormous return of American securities from abroad, while American investments outside this country may have cut some figure. If the United States has bought back its securities with merchandise it is well. If the explanation of the heavy gold imports in 1906 is that the supply of securities for resale to the United States is exhausted, and gold must be sent instead, it is well also. But it creates a somewhat uncomfortable feeling to observe that there has been this heavy receipt of gold and that money is tight nevertheless. At any rate, the percentage of the products of agriculture in our total exports has been steadily diminishing, so that without especially good crops our very large balance of trade is destined to continue, and some kind of settlement, whether it be in securities, gold, or what not, will always have to be made.

Iron Ore Stocks at Lake Erie Docks.

The figures showing the receipts of Lake Superior ore at Lake Erie ports in a given season and the amount of ore left on dock at the close of navigation have ceased to have the significance that once attached to them as iron market factors, but they have an interest because of the change in methods which they reflect. The statistics for 1906, as gathered by the *Marine Review*, show that 32,076,757 gross tons of Lake Superior ore was unloaded at Lake Erie docks, and that 6,252,455 tons was on dock at the close of navigation. In the old days the amounts of ore on dock December 1 and May 1 were watched for with much interest by blast furnace companies, and particular attention was paid to statements of the amount of ore on dock December 1 that was unsold. Furnacemen who had not fully supplied their possible wants up to the opening of navigation in the following year were interested in knowing what the market was likely to be in the winter months. But now that most of the furnaces using lake ores have ores of their own, while those not so supplied are like the others in having plenty of ore storage room adjoining the furnaces, the dock stocks tell very lit-

tle. They represent the ore which could not be taken forward in the season of navigation because the railroads did not furnish cars enough to keep pace with the ore unloading machines; also some odd lots of ore that merchant firms brought down with the expectation of selling it before the new ore reached the docks in the following season. Another factor in this total is the accumulated odds and ends of ore belonging to a considerable list of owners, that remains on dock from season to season, because not immediately desired in the mixture on which the furnaces are running; and a still further tonnage is represented by ore that has remained where it was originally put, because ore is now handled by machines of large capacity and there is never a thorough cleaning up, much ore being thus inert from season to season.

The average of Lake Erie dock stocks at the close of navigation in the past six years—about 6,273,000 tons—does not vary greatly from the total at the close of last season, while the amounts brought down to Lake Erie show a wide range, the total for 1901—17,014,076 tons—being but little more than half that for 1906. Since the dock stocks represent, in the main, the inability of the railroads to cope with the lake vessel capacity in the season of navigation and the double handling of dock ores is uneconomical, it is to be expected that the future will see their further reduction. Winter shipments from dock are often attended with great difficulties, and while as a return load for cars bringing coal to lake cities a moderate ore movement in the winter may benefit the railroads, the economies to the furnaceman are all with its abolition, presupposing that ample storage room has been provided at the furnace.

CORRESPONDENCE.

The Sack Universal Beam Mill at Rombach.

To the Editor: We have learned through the issue of *The Iron Age* of November 1, 1906, and through private channels, that several Gray beam mills are being built in America, after this method has been in successful operation for some years at Differdingen. It may interest your readers to be advised that at the present time preparations are being made to carry out tests on a large scale at the Rombach Works at Rombach with a Sack universal beam mill in accordance with the United States patents No. 365,100 of July 21, 1889, and No. 431,623 of July 8, 1890. It is proposed to roll in this mill beams about 30 in. high and about 12 in. width of flange.

The inventor of this mill, our Hugo Sack, has considerably simplified the details in recent years, and we have no doubt that his mill is preferable to the Gray. The latter requires special rolls for putting work into the outer edges of the flange, these rolls being arranged behind the four rolls which are in one plane. In the case of the Sack mill the working of the edges of the flange is effected without such special rolls, as distinctly described in patent No. 365,100. The Gray mill, therefore, has six rolls, while the Sack mill has only four. Consequently a Sack universal beam mill may be put into housings of the normal type, and this is being done at Rombach, where an existing mill could be directly utilized.

A further advantage of the Sack mill is that the flanges are developed in an inclined form, which are finally straightened in a special finishing mill. In this manner a more favorable form of the horizontal rolls, with reference to wear, is obtained, and it becomes possible to produce flanges of uniform thickness. When the flanges are bent up in the special finishing mill, in one pass, they have no conical form. Such beams are more valuable for bridge construction and also for building work than beams with conical flanges. The Gray mill cannot avoid the conical shape of the flanges and cannot develop the beam in an inclined form. The horizontal rolls, therefore, wear much faster.

We refer to the description in *Stahl und Eisen*, No. 23, 1898, and to a paper read by Mr. Sack before the Iron and Steel Institute at London.

The mill at Rombach will be started in February.

MASCHINENFABBIK SACK.

RATH BEI DUESSELDORF, GERMANY, January 2, 1907.

The New England Foundrymen's Association.

The annual meeting of the New England Foundrymen's Association held at the Exchange Club, Boston, Wednesday evening, January 9, was the largest and most successful in the history of the organization. The social side, a very important one in this as well as in all similar associations, was brought out in the most pleasant manner, through the energetic work of a special committee appointed for the purpose, and included first rate speaking and a musical programme which continued through the excellent dinner and into the postprandial period.

The business meeting was held before dinner, with President Walter E. Snow in the chair. The officers elected were: President, Wm. H. Bense, Kingsley Iron & Machine Company, Canton, Mass.; vice-president, Henry F. Arnold, American Tool & Machine Company, Boston; secretary, Fred F. Stockwell, Barbour-Stockwell Company, Cambridge; treasurer, Geo. H. Lincoln, G. H. Lincoln & Co., Boston. Executive Committee: A. L. Lovejoy, Becker-Brainard Milling Machine Company, Hyde Park, Mass.; H. E. Wetherbee, Jas. Hunter Machine Company, North Adams, Mass.; J. L. Anthony, Weir Stove Company, Taunton, Mass.; H. W. Fernald, Rogers, Brown & Co., Boston; Wm. J. Breen, Hugh W. Adams & Son, Boston.

The secretary's report included the fact that the association's membership has grown to 120 establishments. The treasurer reported a balance on hand.

The Androscoggin Foundry Company, Auburn, Maine, Wolliston Foundry Company, Wolliston, Mass., and Putnam Machine Company, Fitchburg, Mass., were elected to membership.

The matter of increased freight rates in New England came up for consideration, it being stated that repeated advances on rates from Southern points have been made of late. It was voted to appoint a committee to take up this matter, and the chair named the following: Henry A. Carpenter, A. Carpenter & Sons Company, Providence, R. I.; Fred F. Stockwell, Barbour-Stockwell Company, Cambridge; Arthur Gibby, Gibby Foundry Company, East Boston, and George H. Lincoln, George H. Lincoln & Co., South Boston.

After dinner President Bense introduced Henry F. Arnold of the American Tool & Machine Company as the toastmaster, and he in turn presented as the speaker of the evening ex-Congressman Samuel L. Powers, Newton, Mass., who made a witty and timely address, which was followed by a professional musical and dramatic entertainment.

James J. Hill, president of the Great Northern Railway Company, has addressed a letter to Governor Johnson of Minnesota in which he gives an array of calculations to show that the United States should be prepared to expend $1,100,000,000 a year for five years on the construction of railroads. He says that the present lines are operated to their greatest capacity, and that additional terminals and tracks furnish the only means to overcome the present great congestion of business. He alleges that almost all the complaints made to-day, either by shippers or by operating railroad men, of obstacles and dangers in transportation service, are due to deficient trackage.

On December 19 the first electrical power derived from Niagara Falls for the use of Toronto was available. This will be used for all kinds of lighting and power purposes, and the present amount available is 40,000 hp.

PERSONAL.

Homer J. Lindsay, assistant to A. C. Dinkey, president of the Carnegie Steel Company, Pittsburgh, who has been confined to his home for some time by serious illness, is reported to be improving.

W. C. Moreland, secretary of the Jones & Laughlin Steel Company, Pittsburgh, has been elected a director of the First National Bank of that city.

William B. Everest, traffic manager of the Westinghouse Electric & Mfg. Company, Pittsburgh, has been chosen chairman of the Board of Governors of the Traffic Club of Pittsburgh. This means that Mr. Everest will be president of this organization next year.

George M. Basford, who has had charge of the publicity department of the American Locomotive Company, New York, has been promoted to assistant to President W. H. Marshall, the position being newly created.

James Piper, superintendent of the Hartford mine, Negaunee, Mich., has been appointed superintendent of the iron mines of the Tennessee Coal, Iron & Railroad Company.

A. F. Gartz, recently elected president of the Central Foundry Company, has removed to New York from Chicago, where for a number of years he has been treasurer of the Crane Company. Alfred Fowle, Jr., whom Mr. Gatz succeeds, will take a vacation of several months before making new connections.

F. W. Jewell, Marysville, Ohio, succeeds E. C. Lee as president of the Standard Steel Tube Company, Toledo, Ohio, having purchased Mr. Lee's interest in the company.

John Horn, for many years superintendent of the open hearth department of the American Steel & Wire Company at Cleveland, has resigned his position on account of ill health. He is well known to the steel trade, having at different times filled the same position with the Illinois Steel Company and at the Washburn & Moen plant. The employees in his department showed the esteem in which they held Mr. Horn by presenting him with some valuable tokens of their regard on his departure.

C. W. Comstock has resigned his position as purchasing agent for the Wellman-Seaver-Morgan Company, Cleveland, Ohio, which he has held the past 10 years, and has been appointed district sales manager for the Chandler & Taylor Company, Indianapolis. He will have offices in the Caxton Building, Cleveland, adjoining those of Comstock, Jones & Co., in which he is also interested. The latter firm handles power plant equipment, including the M. W. Kellogg Company's radial brick chimneys.

H. J. Lamborn has been appointed superintendent of power and plant in the works of the Yale & Towne Mfg. Company, Stamford, Conn., succeeding F. A. Waldron, who resigned about a year ago. The work involved requires not only executive ability, but also the training of an engineer and broad technical experience. Since 1902 Mr. Lamborn has held the position of mechanical and electrical engineer and superintendent of the magnetic ore separating plants of Witherbee, Sherman & Co. at Mineville, N. Y. The separating plants and power stations were designed and built under his supervision. S. E. Dauchy, who has been acting superintendent of power and plant the past year and has for several years filled the position of assistant superintendent, will continue in the latter capacity under Mr. Lamborn.

T. Kennard Thomson has severed his connection with Arthur McMullen & Co. and has established himself as consulting engineer in the Park Row Building, New York. He has been engaged for many years in foundation, caisson and structural stonework.

The *Bulletin* of the American Iron and Steel Association notes that George Gerry White, secretary of the Phœnix Iron Company, Phœnixville, Pa., has been identified with that one company for 50 years. He entered the service of the company August 4, 1856. In appreciation of his long and faithful service the directors of the company the past year granted Mr. White a vacation of three months, with a continuance of his salary and his expenses for a trip to Europe.

Robert S. Bosworth has purchased an interest in Hugh W. Adams & Son, Incorporated, pig iron commission merchants, New York, and is now secretary of the company. Mr. Bosworth has latterly been connected with Rogers, Brown & Co.

Howard M. Post has recently accepted the position of advertising manager with the Quincy, Manchester, Sargent Company, manufacturer of railroad appliances, having offices in Chicago and New York, with factories at Chicago Heights, Ill.; Milwaukee, Wis., and Plainfield, N. J., this company being the successor to the Railway Appliances Company, the Q & C Company and the Pedrick & Ayer Company.

John P. Nicholas has been appointed selling agent at Chicago for the Lackawanna Steel Company, succeeding Julian L. Yale, resigned. Mr. Nicholas's office will be 1020 Merchants' Loan & Trust Company Building, 135 Adams street, until May 1; after that date the company will take offices in the new Commercial Bank Building, corner of Clark and Adams streets. Mr. Nicholas has been connected for the past four years with the steel department of the International Harvester Company, Chicago, as sales agent.

C. F. Biggert has succeeded John P. Nicholas as sales agent in the steel department of the International Harvester Company, Chicago.

OBITUARY.

JOHN DUNCAN, a pioneer lumberman and foundryman, died at his home in Green Bay, Wis., January 9, aged 81 years. He was a native of Scotland and came to America in 1851, locating in Milwaukee. It is claimed for Mr. Duncan that three years after his location in Milwaukee he built in that city a locomotive for the Chicago, Milwaukee & St. Paul Railroad Company, which was the first locomotive built in the State of Wisconsin. In 1868 he located at Green Bay, where he erected a foundry and operated it for many years. At that city he launched two large steamboats and was also identified with the lumber business. He is survived by three sons.

JAMES H. WILLOCK, a well-known banker of Pittsburgh and actively identified with a number of manufacturing interests in that city, recently died at his home at Sewickley, Pa. He was for some years president of the Second National Bank in Pittsburgh, but resigned in December, 1905, on account of bad health. At the time of his retirement he was also president of the Pittsburgh Lamp, Brass & Glass Company, Tarentum Paper Mills, the Westmoreland Brick Company and the National Union Fire Insurance Company. He was vice-president of the Chamber of Commerce and director of the following: Firth-Sterling Steel Company, Standard Underground Cable Company, Union Switch & Signal Company, First National Bank of Sewickley, Workingmen's Savings Bank & Trust Company of Allegheny, the Central District & Printing Telegraph Company, Guarantee Company of North America, J. C. Lindsay Hardware Company, National Fireproofing Company and Board of Water Commissioners of Sewickley. He was unmarried.

ROBERT ROSS WATT, president of the Watt Mining Car Company, Barnesville, Ohio, died from tuberculosis December 22, aged 46 years. He leaves a widow and two children.

JOHN T. BAILEY, senior member of the firm of John T. Bailey & Co., Philadelphia, manufacturers of cordage, died January 6, aged 76 years. Mr. Bailey was born in Dublin, Ireland, and came to this country at the age of 21. At the time of his death he occupied a prominent position among the citizens of Philadelphia. Twice he held the office of president of the Commercial Exchange, and in 1892 he was elected to the Common Council. He also held membership in several prominent clubs and societies and was a charter member of the Manufacturers' Club.

Customs Decisions.

Hypodermic Needles.

The Board of United States General Appraisers has overruled a protest filed by G. R. Schimmel against the action of the Collector of Customs at Detroit in levying a 45 per cent. duty on hypodermic needles. The collector returned the articles under the metal schedule, whereas the importer contended that the importation should have been allowed to enter under the provision in the act for needles. In overruling the protest the decision remarks that the practice is uniform on the part of the Government to restrict the operation of the tariff provision for needles to those which answer the definition of the term found in the dictionaries. Attention is directed to the fact that in previous decisions so-called kindergarten needles, combing needles and larding needles, although called needles with a qualifying word, were held not to be dutiable as needles, but as articles of metal not specially provided for.

Nickel and Copper Rods.

The board has sustained a protest made by the Driver-Harris Wire Company, Newark, N. J., it being held that hot rolled wire rods or bars, composed of an alloy of nickel and copper, are properly dutiable under paragraph 185 as nickel in bars. The collector's return as metal articles with duty at the rate of 45 per cent. is reversed. "It is not disputed," says the decision, "that nickel is the component of chief value. The only question here is whether the imported article is in the form of bars. The testimony is somewhat conflicting on this point, but we are inclined to hold that the contention of the importers is well founded. The imported article is produced by hot rolling, and is used solely as raw material for making wire by drawing through dies. Dealers of this particular kind of merchandise designate it as wire rods or bars, and we are of the opinion that it is one of the forms of nickel alloy provided for in paragraph 185."

Automobiles Reimported.

The United States Circuit Court of Appeals at New York made a decision last week of wide interest to owners of automobiles using their cars temporarily abroad. An automobile owned by J. T. B. Hillhouse was imported, exported and then reimported, duty being paid on the original importation. While the machine was in Europe a new motor and various repairs were made. When the car reached New York on its return the Collector of Customs disregarded the fact that the machine had been properly registered at the Custom House as required by regulations of the Treasury Department, the contention of the collector being that the automobile had been so far advanced in condition by reason of the repairs that it should be considered dutiable at 45 per cent. As the machine had, upon its original entry, paid the regular duty levied on articles of this kind, Mr. Hillhouse decided to make a test case in the interest of users and importers of motor vehicles.

Both the Board of United States General Appraisers and the Federal Circuit Court affirmed the action of the Custom House authorities in assessing full duty on the car upon its reimportation. The Circuit Court of Appeals, however, in a decision written by Judge Lacombe and coincided in by Judges Coxe and Townsend, reverses the lower tribunals and the collector, and holds that only the actual cost of repairs made abroad by American owners of machines are dutiable under the terms of the tariff law. As for the automobile itself, the court rules that it is as much a "household effect" as a carriage, the latter having been so defined by the Supreme Court. Therefore, the machine, if in use a year, cannot be taxed for its full value a second time upon entry.

Imported Automobiles Not to Be Stamped.

After a conference between James B. Reynolds, Assistant Secretary of the Treasury; Edward S. Fowler, the Appraiser of the Port, and representatives of the Collector's office, held at New York, January 14, it was decided to rescind a recent Treasury order directing that all imported automobiles shall be stamped with a number for the purpose of identification. Under the order issued by the Treasury Department it was incumbent to stamp the machines, either on the frame or the motor. As the indexing was done with a die it was soon found that grave danger existed that the metal portions so marked would crack or be otherwise seriously affected. Under these circumstances the Appraiser advised the Treasury authorities that the stamping should be either omitted entirely or the marking done on some other part of the machine. Pending a final determination of the question no numbers will be attached to the cars.

San Francisco Looks for a Good Year.

SAN FRANCISCO, CAL., January 7, 1907.—We are again on the threshold of a new year. Despite the dreadful shock that business of all kinds in this locality has received in the course of 1906 the prospects to-day are of the brightest. Rain came late in the year, but it came, and the agricultural and mining outlook is of the best. We can bank on an income from the farm, mine and forest of not far from $200,000,000 for the new year. Then a great deal of the $180,000,000 received for insurance will be spent for supplies to be used in the rebuilding. One of the principal articles to be used will be structural steel, but how much cannot now be said. To judge by the talk soon after the fire one would have thought that the new San Francisco was to be all structural steel and reinforced cement, but this is far from being the case. The general tendency at present is toward cheapness, although some fine buildings are going up on which expense is no object and many more are planned. The cost of restoring the buildings destroyed or damaged by the fire, however, will be fully $100,000,000. It will take years to complete the work, but the local expenditure of this vast sum will keep up wages and prices.

Some of the Nevada mining people have been in this city looking after machinery. Once they get going these various mining camps will give our foundries and machine shops a great deal to do. Considerable of the iron work required in the rebuilding here is already being prepared by our home industries. The various foundries, boiler shops, machinery shops, &c., which were located in the section south of Market street and west of Stewart street are being re-established one by one, and something of the old activity is once more visible in that section, which for so many months was a waste of blackened débris.

J. O. L.

Milliken Brothers, Incorporated.—In connection with a circular referring to the $3,000,000 bond issue of Milliken Brothers, Incorporated, dated February 1, 1906, a statement from the president, Foster Milliken, under date of December 1, says that the open hearth plant at Staten Island is being steadily operated and with satisfactory results on a mixture of 40 per cent. pig iron and 60 per cent. scrap. It is estimated that on present prices for raw materials and for structural shapes, the plant has a profit of $7.50 a ton, or $1,125,000 a year on the 150,000 tons of finished product it is expected to produce. The circular says it is estimated that between one-third and one-fifth of the entire structural output of the country for building purposes is consumed in and around New York City. Among the company's contracts on hand are mentioned the following: Structural steel work on the new Pennsylvania terminal, New York; new plant on Staten Island for Proctor & Gamble, Cincinnati, Ohio; an 18-story office building for the Humboldt Savings Bank, San Francisco; at Greenhithe, near London, England, the largest wall paper factory in the world, to cost $2,500,000; the new Bourne Building in New York City for the Singer Mfg. Company, to be 612 ft. high.

The coal production of Illinois during the last 10 years has increased 113 per cent.

Ship Subsidy Legislation.

WASHINGTON, D. C., January 15, 1907.—The House Committee on the Merchant Marine and Fisheries to-day voted down the Senate bill providing cargo subsidies for the American merchant marine, and adopted a substitute measure authorizing the Postmaster-General to expend approximately $3,000,000 per annum in additional subventions for the carrying of mails on steamships "hereafter built and registered in the United States or now duly registered," between ports of the United States and ports of Central and South America and the Orient. Seven separate lines are provided for, including an increase in one line already in existence and subsidized under the annual post office appropriation act.

The friends of the Senate subsidy bill yielded to the inevitable only after a contest lasting nearly a year. When it was finally determined that the Speaker and the House leaders would not agree to a cargo subsidy bill, Chairman Grosvenor of the House committee presented a substitute granting mail subventions to 11 lines of steamers, but although the committee is made up of 12 majority and only six minority members, it was found to be impossible to report this bill with a favorable recommendation. The House leaders were then appealed to and the matter was finally carried to President Roosevelt, with the result that Representative Littauer of New York, although not a member of the House Committee on the Merchant Marine and Fisheries, undertook to draft a moderate compromise, but owing to the absence of Representatives Flack of New York and McDermott of New Jersey, both of whom favored the compromise bill, it was found to be impossible to get this measure out of committee, and the Speaker finally adopted the heroic method of requesting Mr. Flack to resign from the committee and appointing Representative Littauer in his place.

The minority members of the committee, angered at this device, decided to force the majority to disclose the fact that a deal had been made for the adoption of a compromise bill, and accordingly moved a favorable report on the original Senate cargo subsidy measure, thereby compelling the majority members to vote against a bill for the passage of which they have diligently labored for the past twelve months. One Republican member inadvertently voted for the Senate bill, but changed his ballot before the result was announced, thereby defeating the measure by a vote of 8 to 7. The Littauer compromise was then adopted.

In view of the co-operation of the Speaker and the House leaders in bringing out the Littauer substitute, there is no doubt as to its passage by the House. The representatives here of the various shipbuilding interests that have so strongly favored the cargo subsidy bill are strongly desirous that the substitute measure shall be enacted, believing that it will greatly stimulate the demand for fast steamships for the foreign trade. It is suggested by these interests that the practical operation of the proposed law will be such as to induce Congress in a few years to follow it up with a cargo subsidy bill.

W. L. C.

The Cement Users' Convention.

The intense interest manifested in the proceedings of the third annual convention of the National Association of Cement Users, held at the Auditorium, Chicago, January 7 to 12, inclusive, indicates the giant strides that have been made in the adoption of cement for building purposes within the last few years. The attendance enrollment reached a total of nearly 1000, practically doubling the number of those present at the Milwaukee meeting last year.

The papers presented related largely to the manufacture and artistic finish of building blocks, although several dealt with the use of reinforced concrete for large structures. The address delivered by Professor W. K. Hatt, of Purdue University, Lafayette, Ind., on the "Mechanics of Reinforced Concrete," attracted considerable attention and aroused much discussion. Officers for the ensuing year were elected as follows: Richard L. Humphrey, Philadelphia, president; Merrill Watson, New York, first vice-president; M. S. Daniels, Suffern, N. Y., second vice-president; O. U. Miracle, Minneapolis, Minn., third vice-president; A. Monsted, Milwaukee, Wis., fourth vice-president; W. W. Curtis, Chicago, secretary, and H. C. Turnery, New York, treasurer.

An elaborate display of machinery and equipment for building blocks, brick and concrete and such accessories as are required by cement users generally was exhibited in Tattersall's convention hall on Sixteenth street, where more than 100 manufacturers and agents were represented.

Large Escalators for the Belmont Tunnel.

The New York & Long Island Railway Company, known as the Belmont or old Steinway tunnel system, has awarded a contract to the Otis Elevator Company for the two largest escalators ever built, to be installed in the Manhattan terminal of that system at Forty-second street, between Lexington and Third avenues. Trolley cars instead of trains are to be operated in this tunnel, and these running on short headway provide a tremendous capacity. It is estimated that the capacity will be at least equal to that of the trains of the present Brooklyn Bridge during rush hours, and the escalator equipment above referred to is claimed to be equal in point of capacity to that of the entire stairway equipment of the Manhattan end of the Brooklyn Bridge.

Furthermore, not only will the escalators be sufficient to handle any number of people up to the capacity of the trolley cars of the tunnel, but they will also serve to marshal the crowds into streams of people moving uninterruptedly and not coming into conflict with one another. The escalators will provide service between levels something over 55 ft. apart and will be arranged side by side. Most of the time one will be operated ascending and the other descending, but during the morning rush hour both will be operated ascending. The escalators in common with the entire terminal possess no woodwork or other inflammable material. As is well known the escalator is the invention of Charles D. Seeberger, who is now head of that department of the Otis Elevator Company.

In December, the five Carrie furnaces of the Carnegie Steel Company at Pittsburgh turned out 68,167 gross tons of pig iron, beating the best previous record in March of 66,520 tons. No. 4 stack at this plant has recently been rebuilt and some new equipment added. No. 3 has made a remarkable record in the fact it has been in continuous blast for six years, not having been out of commission one day in that time. Jacob Mohr is superintendent of the plant.

The United States Steel Corporation's circular to employees, issued this month, offers them the privilege of subscribing for the preferred stock at $102 a share. In connection with the bonus distribution made in December to such employees as participate in this arrangement it was announced that a certain percentage of the bonus credit for 1906 would be in common stock at $45 a share.

The regular monthly meeting of the Associated Foundry Foremen of Philadelphia and vicinity was held in that city January 14. The subject for the evening's discussion was a paper by E. H. Mumford of the E. H. Mumford Company, manufacturer of foundry molding machines, on the Rathbone multiple molding machine, which was described at length in *The Iron Age* for December 6.

At the annual meeting of the Engineers' Society of Western Pennsylvania, recently held in Pittsburgh, S. M. Kinter was elected president, George T. Barnsley, vice-president; A. E. Frost, treasurer; Edmund Yardley, secretary, and R. A. Cummings and Walter Riddle directors for two years, and F. Z. Schellenberg and J. O. Handy directors for three years.

The New York Automobile Show.

The seventh annual exhibition of automobiles, their parts and accessories, under the auspices of the Association of Licensed Automobile Manufacturers, opened last Saturday and will continue through the present week. As usual it is being held at Madison Square Garden. Each year's show sets a new standard in matter of arrangement and decorations, and last year it seemed as though the zenith had practically been reached, but from the artistic standpoint the Garden probably never looked better than it does this week. The decorations are exceedingly lavish, and are reported to have cost $50,000. The true measure of the success of the show is the amount of business done, and that will not be known until it is closed, but it is the belief of the exhibitors that this will prove the banner show.

The first impression given by the cars displayed is an even higher standard of elegance. The time has passed when a purchaser of means was obliged to look abroad for a car that would gratify his taste. Cars costing from $4000 to $10,000 are not uncommon now, and such of course excited the most interest from those who went simply to see. At the same time the moderate priced vehicles are attracting greater attention than ever before.

A review of the exhibits brings out the surprising fact that there is not a single one-cylinder car in the show, except in the case of one small buckboard. The standard in both American and foreign makes is four-cylinder, but for economical first cost and operating expense small vehicles of typical American make have two cylinders. Last year saw the first six-cylinder motor car, and this year there were 10 examples, of which six are American and four European. Of four-cylinder cars, American make, there are 119, and 30 foreign and three American commercial. There are no foreign two-cylinder cars, but five American and two commercial. Shaft drive shows an increasing gain in favor, as evidenced by the fact that there are 112 of this type, against 61 chain driven cars. Among the foreign makes the percentage of chain driven cars is greater than among the American. Of business vehicles there are 11 electrically driven and seven with gasoline engines. There are also 34 electric pleasure vehicles.

For the last two or three years there has been a disposition on the part of those concerned with the mechanical side of automobile design and manufacture to meet together and exchange experiences. This resulted in the organization of what is known as the Mechanical Branch of the Licensed Manufacturers' Association, and its influence is already evident, as it is largely responsible for the approximate perfection to which automobile construction has developed. Meetings are held usually once a month, and the membership now totals over 60 engineers and factory superintendents. Tuesday and Wednesday this body was in session at the association's New York headquarters, considering in the forenoon of the first day alloy steels from the standpoint of the manufacturers, it being the desire to learn what the manufacturers could supply and would recommend for automobile service. In the afternoon the same subject was considered from the standpoint of the consumers. A number of representatives of the large steel manufacturers took part in this conference.

It is believed that such an interchange of ideas will result in the standardizing of specifications, to the advantage of both sides. Wednesday gear cutting was brought up for consideration.

An indication of the intention of the American builders to make an emphatic bid for foreign business was evident in a meeting of manufacturers and sportsmen Wednesday, when it was definitely decided to send 50 or 60 American cars in June and July of this year to take part in a run of 4000 miles through France, Spain, Italy, Austria-Hungary, Germany, Belgium and England, in competition for an American gold cup, to be donated by W. K. Vanderbilt, Jr. This traveling exhibition of the American automobile industry, it is believed, will be a decided stimulus to the foreign trade.

Canada and Its German Surtax.

TORONTO, January 12, 1907.—Germany and Canada may soon conclude their tariff war, which has brought advantage to neither country. When Canada's name was struck off the list of nations whose goods are admitted into Germany at the conventional tariff rates Canadian farmers were deprived of their foothold in the German market, and this loss of Canada's was the United States' gain, for the farmers of the latter country got the larger part of what would have been Canada's share of the German demand for foodstuffs. When, in retaliation, Canada made its duties on German articles one-third greater than those on articles imported from other non-British countries, Germany's trade here at once fell off. Her loss also proved the United States' gain, for the steel rails, the hollow ware and the numerous other steel articles this country had formerly been buying from Germany began at once to come largely from the United States.

The announcement of Mr. Fielding's new tariff seems to have brought the parties together. At all events, the German Government's representative at Ottawa has been discussing the matter with the Dominion Ministers. Nothing is publicly known of the proposals that have been made, but it is understood that Germany desires the advantages of the intermediate tariff. It seems scarcely probable that the Dominion Government would consider the German conventional rates a fair exchange for its own intermediate rates. Possibly the matter may be compromised by the concession to Germany of the intermediate rates on certain specified articles and the general rates on all other articles, in return for the German conventional rates all round. Lord Strathcona, Canada's High Commissioner in Great Britain, has recently arrived in Ottawa, and it is thought that his mission has to do in part with the tariff issue between Canada and Germany.

The Antidumping Duty.

As has already been explained in this correspondence, the antidumping duty is somewhat changed. It is no longer applicable to imports of such articles as are not produced in Canada. Raw cotton, for example, would be exempt from it. In the second place, this special duty is no longer confined to articles on the dutiable list, but free goods are now also subject to it. This latter point is one the Finance Minister has thought it necessary to impress on the House. Upon free goods imported into this country at a price below that ruling in the country of production a dumping duty not exceeding 15 per cent. ad valorem may be imposed. This duty was the subject of quite a long discussion in the House the day after the reassembling of Parliament. The point was made that in respect to machinery for the making of articles not now produced in Canada the duty ought not to be imposed.

C. A. C. J.

The Export Convention.

The national convention for the Extension of the Foreign Commerce of the United States, called by the New York Board of Trade and Transportation, was held in Washington, D. C., on Monday, Tuesday and Wednesday of this week, with a large attendance from every State and Territory in the Union. James W. Van Cleave, St. Louis, was made temporary chairman, and permanent officers were elected as follows:

President, William McCarroll, New York; vice-presidents, James W. Van Cleave, St. Louis; Cornelius N. Bliss, New York; Francis B. Loomis, Springfield, Ohio; Dr. W. P. Wilson, Philadelphia; Henry G. Davis, Elkins, W. Va.; S. B. Packard, Marshalltown, Iowa, and C. W. Pridy, Norfolk, Va.; secretary, Frank S. Gardner, New York.

On Monday addresses were delivered by E. S. A. de Lima, New York, chairman of the Organization Committee, and Alvin H. Sanders, Chicago, favoring reciprocity treaties. On Tuesday Secretary of State Root and Secretary of Commerce and Labor Straus were among the speakers, the former favoring a maximum and minimum tariff.

NEWS OF THE WORKS.

Iron and Steel.

Reports that the Pennsylvania Swedish Iron Company, Cheswick, Pa., manufacturer of charcoal iron blooms, would erect a mill for the manufacture of sheets are untrue. This company has not made any plans for extensions or taken any definite steps toward increasing its business.

The Titanium Mfg. Company has purchased a site of 4 acres at Lewiston, N. Y., on the Niagara River, a short distance north of Niagara Falls, on which it will build a plant for the manufacture of titanium and titanium alloys, for use in steel manufacture, and also for the manufacture of special alloy steel products. Niagara Falls power will be used.

The Fort Worth Iron & Steel Company, Forth Worth, Texas, has doubled the capacity of its plant to 50 tons of finished product per day. The name of the company has been changed from the Fort Worth Iron & Steel Mfg. Company to the Fort Worth Iron & Steel Company. The capital stock remains at $200,000, and the officers now are: President, Wm. Capps; vice-president, J. T. Anderson, and secretary, Wm. Bryce. J. T. Anderson was formerly secretary and B. L. Waggeman, vice-president.

The Seamless Tube Company of America, Frick Building, Pittsburgh, works at Monessen, Pa., has recently purchased four 300-hp. Allis-Chalmers compound wound nonreversible direct current motors. Speed variation will be obtained by means of shunt field regulation, and each motor will be furnished with a starting panel, including an automatic circuit breaker and switch. One motor will be connected by gears to a 20-in. two-high mill for rolling tubes. One will be directly connected to a mill for piercing steel billets, and two will be connected by gearing to cold draw benches for cold drawing tubes.

Corrigan, McKinney & Co., Cleveland, Ohio, will build a new blast furnace in that city the coming summer, provided a suitable site can be secured. It is understood that the company desires about 1600 ft. of river front. This will furnish room for the building of extensive ore docks.

Furnace No. 2, the new furnace of the Toledo Furnace Company, Toledo, Ohio, was blown in last week. The furnace is expected to show a daily capacity of 350 tons. The output will be sold by Pickands, Mather & Co., Cleveland, Ohio.

The Federal Furnace Company, Chicago, which has just completed one new stack at South Deering, has decided to proceed immediately with the erection of a second furnace of the same size and capacity of the one to be blown in this week. The plans originally provided for two stacks, and the power house and ore handling equipment were built with this in view. Additional blowing capacity will have to be added and another cast house will be built. The two furnaces will have an annual estimated capacity of 240,000 tons. The product will consist of foundry and malleable Bessemer iron.

General Machinery.

The business of the Worcester Textile Machine Company, 5 Cypress street, Worcester, Mass., has been incorporated with the idea of enlarging in the near future and beginning the manufacture of machine specialties. The capital stock is $15,000, and the incorporators are George A. Judson, who has been the sole owner; Jerome N. Marshall and George M. Faulkner.

The Climax Ice Machine Supply & Pump Company, 136 Liberty street, New York, manufacturer of compression and absorption ice and refrigeration machinery, also an entire new design of pumps, expects to build a plant this year.

The Excelsior Tool & Machine Company, East St. Louis, Ill., expects to add to its machine shop as soon as it can catch up with the work now on hand. Recent orders include an entire equipment of dies in connection with its multiple punching machine for steel range work, also 8-ft. shear for the Wehrle Company, Newark, Ohio; large briquet machine for the Renfrow Briquet Machine Company, East St. Louis, Ill.; 10 machines for Joseph T. Ryerson & Son, Chicago, Ill., for cutting beams, channels and angle iron; several spike machines, weighing 35 tons each, to make standard steel rail spikes automatically, for the Atlanta Rolling Mills.

The Vulcan Iron Works, Wilkes-Barre, Pa., is building 30 locomotives a month, which are being shipped to a number of foreign countries. It is understood that the company contemplates making some improvements this year, including the addition of several new departments.

The Canton-Hughes Pump Company, Canton, Ohio, successor to the Canton Pump Company, and the Snider-Hughes Company of Cleveland, Ohio, has just completed the installation of machinery, received through the purchase of the latter company, and also the erection of a two-story addition to its plant. This gives the new company a machine room 305 ft. in length. The stock room, pattern room and paint room occupy the two-story addition. The new organization starts the year with a large volume of business in both domestic and export lines, and is now engaged in the erection of a number of large compound pumps for export to Japan, where the Canton Pump Company had a large trade. This company also makes a specialty of pottery machinery, consisting of filter presses, plunger mills, sifters, &c., and because of its ability to make prompt shipment recently received a large contract for machinery for installation in Alabama.

The Thomas Carlin Sons' Company, Allegheny, Pa., builder of shears, ore grinding pans and rolling mill machinery, states that the year 1906 was the most prosperous in its history. The new year has also opened up well, the company having received quite a large number of orders for its products. At present it is building four shears having an aggregate weight of 120 tons and arranged for individual motor drive, for shipment to Canada, while a number of steam driven shears have just been shipped to Los Angeles, Cal., and two to Amherst, Nova Scotia. The company is also receiving large orders for grinding pans and is now building 12, with an aggregate weight of 250 tons, for shipment in this country and to Mexico. It has recently received an order for two concrete mixers for shipment to Tokio, Japan, while its hoisting engine, derrick and contractors' supply departments are also very busy.

The Compania Minera Borda Antigua y Anexas, S. A., whose mines are located close to the Dos Estrellas mines, near Tlalpujahua, has recently placed an order with G. & O. Braniff & Co. for an electrical installation for its mines. The motors, transformers, &c., will come from the works of the Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., and the pumps from the Byron Jackson Machine Works, Oakland, Cal. There is already on the ground, being erected, a 250-hp. Lidgerwood steam hoist, purchased before electric power entered the camp. The Westinghouse Company will attach to this hoist one of its standard 150-hp. alternating current hoist motors, the only necessary change in the hoist being the adding of gear and pinion to adapt the drive. In the way of pumping outfits there will be provided four horizontal centrifugal pumps direct coupled to alternating current motors, also two motors for driving a blower for ventilating the mines. Three 50-kw. transformers will be used to change the voltage of the Mexican Light & Power Company's circuits from 3000 to 400 volts, for motor and lighting work.

The Columbia Machine Works & Malleable Iron Company, Chestnut street, Brooklyn, N. Y., has added to its manufacturing equipment a 12-in. McDougal & Potter steam hammer, 36-in. bulldozer, an Ajax forging and upsetting machine and two new oil furnaces. This equipment brings the company's forging department up to date, and it is now prepared to make prompt deliveries in castings of various sizes.

The Oswald Motor Company has been incorporated at Goshen, Ind., with $10,000 capital stock, to manufacture motors, air compressors, &c. The directors are J. Elmer Newell, Wm. T. Miller and Orrin M. Curtis.

Power Plant Equipment.

The N. C. Davison Company, manufacturers' agent, Empire Building, Pittsburgh, Pa., has recently taken the following contracts: Kittanning Clay Product Company, Kittanning, Pa., one 150-hp. Bessemer gas engine; S. Jarvis Adams Company, Pittsburgh, one 110-hp. Bessemer gas engine; Fawcus Machine Company, Pittsburgh, one 85-hp. Bessemer gas engine; Morris Glass Company, Point Marion, Pa., one 15-hp. Bessemer gas engine; George Sharrard Paper Company, Wellsburg, W. Va., an electric pump with a capacity of 900 gals. per minute; Hartford City Paper Company, Hartford City, Ind., two electric pumps for its new plant, one of 1000 gals. capacity per minute and one of 400 gals. per minute.

The Delaware Barytes & Chemical Company, Newport, Del., will rebuild its plant, which was recently destroyed by fire. Power will be furnished by 150 hp. of boilers and a 100-hp. engine.

The Power Specialty Company, New York, in order to handle to better advantage the rapidly increasing demand for the Foster superheater, has within the past year opened branch offices in Boston, Chicago and Philadelphia. On January 1 it established an additional branch office in the Chemical Building, St. Louis, Mo. Among numerous orders received for the Foster superheater within the last few months for installation in Franklin, Heine, Babcock & Wilcox, Stirling, Edge Moor, Wickes and Erie City boilers are the following: Washington, Brooklyn and Charleston navy yards; American Locomotive Company; New York, New Haven & Hartford Railroad Company; International Harvester Works; Philadelphia & Western Railroad; New Jersey & Hudson River Railway & Ferry Company; Solvay Process Company; Raritan Copper Company; Western Steel Car & Foundry Company; Southern Pacific Steamship Company; James S. Kirk & Co. The Washington navy order is a duplicate of three previous orders, each 1500 hp., in Babcock & Wilcox boilers. The Power Specialty Company has also equipped a large number of internally fired and return tubular boilers and has built a great many separately fired superheaters.

Taylor Brothers, Sharon, Pa., have received a contract for the erection of the power house for the new plant of the Petroleum Iron Works Company at Sharon, Pa. The building will be 38 x 106 ft., of brick construction, and will be equipped with dynamos, electric cranes, boilers and engines.

Foundries.

The Vulcan Company has been incorporated at London, Ont., with a capital of $100,000, to manufacture furnaces, stoves, &c.

The provisional directors include R. W. Shaw, J. W. Hyman and E. W. M. Flock, London, Ont.

The Maynard Steel Foundry Company, Milwaukee, Wis., has been recently incorporated with a capital stock of $6000. This company will manufacture a line of small and medium weight crucible steel castings, making a specialty of sections required in automobile manufacture. It is expected that the new plant, now in course of construction, will be ready for operation by March 1.

The foundry business formerly conducted by Philip Keipper, Buffalo, N. Y., under the name of the Niagara Foundry Company, has been incorporated as the Lake Erie Foundry Company, with a capital stock of $10,000. The incorporators are Philip Keipper, A. G. Bartholomew and S. L. Brown.

The MacKinnon Boiler & Machine Company, Bay City, Mich., is adding to its foundry a 48-in. shell cupola and is increasing the hight of its 60-in. shell cupola.

The recent fire at the plant of the Michigan Stove Company, Detroit, Mich., destroyed the storage buildings but did very little damage to the mechanical part of the plant, including the foundries, power plant, &c. Operations have been resumed, and the first heat in the foundry was taken off January 12. Within another week the company expects to have its plant in full operation and to be in a position to fill orders promptly. The burned buildings are being torn down and the foundations will be used for new structures, which will be built as quickly as possible.

A circular recently issued by Charles B. Barney & Co. concerning the United States Cast Iron Pipe & Foundry Company, states that the latter company is about completing additions to its plants which will add fully 25 per cent. to its productive capacity.

The National Steel Foundry Company, which is closely allied with the National Wire Corporation, New Haven, Conn., both of which are controlled by the National Steel & Wire Company, has been placed in the hands of H. Stuart Hotchkiss and Frederick B. Farnsworth as receivers. These gentlemen are also receivers for the National Wire Corporation.

The Missouri Malleable Iron Company, East St. Louis, Ill., has now under consideration an addition to its plant consisting of a foundry building 85 x 218 ft., with two furnace rooms, each 40 x 45 ft. An addition to the tumbling and grinding department, 75 x 100 ft., will also be built. The foundry building is to be of fireproof construction throughout, with steel trusses supported on brick walls, and the roof will be made of reinforced concrete tiles. Four 35-ton annealing ovens will also be added, which will have a capacity of about 4000 tons. These improvements will increase the capacity of the plant to 25,000 tons.

The New Bedford Foundry & Machine Company, New Bedford, Mass., has been incorporated with a capital stock of $15,000. Edward L. Besse, Fairhaven, Mass., is president; Seth J. Besse, New Bedford, Mass., treasurer and clerk, and they, with A. G. Caswell and F. D. Stetson, constitute the Board of Directors. The company states that it is not yet ready to give information concerning its manufacturing plans.

McNab & Harlin Mfg. Company, 50-56 John street, New York, manufacturer of brass and iron goods for steam, water and gas, states that owing to the strong tendency of the trade toward high pressure work it is steadily increasing its capacity in this direction. From time to time the company has added to its facilities, especially in the cast iron, screwed and flange fittings departments, as well as in the line of drainage fittings, iron cock and iron body valves, hydraulic valves and fittings and high pressure steam metal valves and cocks.

The United Foundry & Machine Company has been incorporated in Canton, Ohio, with a capitalization of $10,000. A plant has been secured and the company will engage in the general jobbing business, and in the spring expects to get into malleable work. The officers are: George P. Bonsky, president and general manager; George F. Ebel, vice-president; August Reichert, secretary and treasurer.

The cupolas of the new malleable iron foundry of the Pittsburgh Valve Company, Barberton, Ohio, were fired a few days ago. The force of employees will be added to gradually, and it is expected that it will be increased from 500 to 1500 within two or three months.

E. M. Peters, S. L. Riddle, J. M. Davis, S. R. Elder and E. W. Cole will apply for a charter this month for the Darlington Foundry Company, Darlington, Pa.

Marcellin C. Adams, Edward Oberndorf and Sidney S. Klinardlinger will apply on January 23 for a charter for the Acme Foundry Company, Pittsburgh, Pa. The company will manufacture machinery and mechanical appliances from iron, steel, brass, copper and other metals.

The Blaisdell Machinery Company has awarded the contract for the construction of its new foundry building at South Bradford, Pa. The new building will be of brick and steel construction, 61 x 80 ft. Later additions will be built to the storage warehouse and pattern shop.

Bridges and Buildings.

The Union Bridge & Construction Company, Kansas City, Mo., has been incorporated with a capital stock of $50,000, to do general construction work. L. S. Stewart is president, Lee Treadwell vice-president and chief engineer, Clarence A. Neal secretary, and H. K. Seltzer treasurer.

The York Bridge Company, York, Pa., has been awarded contract for the construction of the State bridge at Mifflinville, Pa., over the Susquehanna River, at $125,000.

Fires.

The fire loss to the smelting plant of Honkamp Brothers, Fortieth street and Wentworth avenue, Chicago, was not so great as first reported, and will not exceed $12,000. The principal damage was done to the building, the furnaces and stacks being uninjured.

The puddle and plate mills of the Potts Bros. Iron Company, Pottstown, Pa., were badly damaged by fire on January 8. The loss is placed at $25,000.

The foundry of the F. A. Klaine Company, Cincinnati, Ohio, was destroyed by fire January 11. The loss is placed at over $20,000.

The plant of the Standard Powder Company at Horrell Station, near Hollidaysburg, Pa., was destroyed by an explosion January 10.

The foundry of Ingalls & Kendricken, Boston, Mass., was burned January 10, the loss being about $25,000.

Eliza Furnace of the Jones & Laughlin Steel Company, Pittsburgh, Pa., was badly damaged by an explosion January 9.

The casting room and machine shop of the Van Buren Foundry, Van Buren, Ark., were burned January 9, the loss being about $20,000.

Hardware.

The Mishawaka Folding Carriage Company has been incorporated at Mishawaka, Ind., with $50,000 capital stock to manufacture folding go-carts, &c. The directors are W. A. McInerny, A. B. McInerny and Chas. A. Ostrom.

The Eclipse Hook & Eye Company has been organized at Indianapolis, Ind., with $25,000 capital stock to manufacture a newly patented hook and eye. John F. Wood is president.

The Giant Heater Company, 66-68 Monmouth street, Springfield, Mass., has been incorporated in Massachusetts with a capital stock of $100,000. Wilbur F. Young is president and treasurer; Henry H. Caswell, secretary, and they with George M. Faulkner constitute the Board of Directors. The company has been putting the Giant heaters on the market since 1903. They are used for heating with gas jet, or gas or oil burner.

Young Bros., 384 West Boylston street, Worcester, Mass., ladder manufacturers, are to erect an addition to their factory, 36 x 60 ft., two stories. Little new machinery will be required with the exception of a gasolene engine of 25 or 30 hp.

The Aabt Mfg. Company and the Fischer Steel Rod Mfg. Company, South Elgin, Ill., will consolidate in the near future and a new company will be organized with a capital of $100,000. The Aabt Mfg. Company is capitalized at $60,000 and is engaged in the manufacture of telephones, telephone supplies and ice tools, while the Fischer Steel Rod Mfg. Company is capitalized at $30,000 and is engaged in the manufacture of steel fishing rods and sundries. The manufacturing building for the new company will be 100 x 150 ft. and three stories high. Fred. H. Raymond, 404 Security Building, Chicago, is secretary of the Aabt Mfg. Company and the attorney engaged in promoting the consolidation.

The Solderene Company, 53 State street, Boston, has been incorporated in Massachusetts to manufacture Solderene and specialties and to put on the market an aluminum solder and paste. The company has an authorized capital stock of $50,000. Edward I. K. Noyes is president, and Herbert W. Smith, treasurer.

The John Fricker Company has been incorporated at Rochester, N. Y., to manufacture metal ceilings and stamped metal goods. The incorporators are J. Fricker, J. A. St. Helena and E. M. Fricker, Rochester.

The Globe Stamping Company has been incorporated at Buffalo, N. Y., to manufacture metals and stamped metal goods, with a capital stock of $20,000. The incorporators are A. L. Warner, L. Rothschild and C. Kuhn, Buffalo.

The Worcester Wire Novelty Company, Canton, Ohio, has recently put on the market a heavy wire window guard of artistic design. These guards are finding a ready sale among builders throughout the country.

Heller Brothers Company, Newark, N. J., is putting up a three-story, 50 x 125 ft. brick addition to its file works. The company's steel works is being supplemented by a new steel rolling mill, 75 x 200 ft., for 10 and 18 in. train of rolls. Both structures are expected to be in operation in the early spring.

The Washington Iron & Wire Works Company, Seattle, Wash., has been organized to engage in the manufacture of ornamental iron and wire work, including fire escapes, elevator inclosures, wire and iron fencing, wire screens and bank and office railings. The plant, which is now under construction, will be placed in operation about January 20. This company is a reorganization of the Washington Iron Works Company, and the capital stock has been increased from $25,000 to $40,000. The officers are: J. U. Nisbet, president; Frank Hall, vice-president; M. A.

Gilkinson, secretary and treasurer, and H. D. Brady, general manager.

The Hazen Mfg. Company has been organized at Hudson, Mich., to engage in the manufacture of iron force and lift pumps. Officers have been elected as follows: L. R. Hazen, president; W. S. Hazen, vice president; G. H. Loyster, secretary; Arthur Green, treasurer, and W. E. Keister, general manager. These officers, together with J. J. Croft of Toledo, will constitute the Board of Directors.

The Rockford Bolt Company, Rockford, Ill., has been incorporated with a capital of $20,000, and will take over the business of the company formerly conducted under the same firm name. The incorporators are Charles R. Wise, Robert H. Tinker and R. C. Messner. In addition to the manufacture of bolts, the company makes a specialty of forgings.

The Shimer Woven Wire Fence Company, which will build a plant at Coffeyville, Kan., has organized with the election of the following officers: W. S. Poling, president; F. O. Weis, vice-president; E. T. Ireland, secretary, and C. M. Ball, treasurer.

The Worcester Metal Goods Company, 17 Hermon street, Worcester, Mass., which recently purchased the business and equipment of the Grilley Company, New Haven, Conn., has completed the moving of the plant to Worcester, where operations have begun. The company has ordered several new wire forming machines, which, together with the similar machines now in operation and an equipment of presses, will enable it to do all classes of small stamping and small wire forming. Walter D. Grout, formerly with the Spencer Wire Company, Worcester, is the treasurer and active head of the business.

The capital stock of the Stowell Mfg. & Foundry Company, manufacturer of hardware, South Milwaukee, Wis., has been increased from $200,000 to $300,000. The foundry capacity of its plant is to be increased and other changes are to be made, but have not as yet been decided upon.

C. E. Rice, 35 West Bridge street, Springfield, Mass., manufacturer of pieced tinware and cans, is to erect a new shop building for his business, to be 40 x 90 ft. and three stories.

Burns, Silver & Co., Bridgeport, Conn., manufacturers of furniture trimmings and brass goods, have acquired the large factory building formerly occupied by the Canfield Rubber Company, and will occupy the property as an addition to its manufacturing plant. The building is 100 x 200 ft. and four stories and will practically double the capacity of the works.

The Walden Mfg. Company, 65 Beacon street, Worcester, Mass., has been incorporated to manufacture ratchet wrenches and has established a factory at the above address. The company has a capital stock of $20,000. The incorporators are Frederick E. Walden, Charles M. Walden and Charles A. Shedd. The company's wrench was described in our issue, January 10, as placed on the market by Patterson, Gottfried & Hunter, New York City.

The G. F. Barron Cooler Company has been incorporated at Palmyra, N. Y., with a capital of $25,000, to manufacture coolers, refrigerators, &c. The incorporators are G. F. Barron, Palmyra, and F. Hedges and W. D. Stower, Rochester.

The business of Andrew Fyrberg & Sons, Hopkinton, Mass., manufacturers of firearms, has been incorporated as the Andrew Fyrberg & Sons Mfg. Company. The capital stock is $40,000. Andrew Fyrberg is president and treasurer; Anna M. Fyrberg, clerk, and Andrew Fyrberg, N. J. A. Fyrberg and Hermon Fyrberg are the directors.

The Goodell-Pratt Company, Greenfield, Mass., manufacturer of tools, is contemplating large additions to its works, which will give 25,000 sq. ft. of additional floor space, in addition to the 10,000 sq. ft. of new space included in the new storehouse, work upon which was started last fall.

The Jointless Refrigerator Mfg. Company has been incorporated for the purpose of engaging in the manufacture of refrigerators provided with one-piece enameled linings. The incorporators of the company are Julius O. Frank, Frank H. Munkwitz and William von Bombach.

The Safety Door Hanger Company, Hamilton, Ontario, has been incorporated with a capital of $40,000 to manufacture door hangers, trimmings and other hardware.

The Jackson Knife & Shear Company, Fremont, Ohio, has been reorganized and is now incorporated under the name of Jackson Shear & Razor Company with a capital of $150,000. The knife business, which was an important feature of the old firm, has been practically discontinued, and the new title is better descriptive of the present product, which consists of a full line of shears, scissors and razors.

The Arcade Mfg. Company, Freeport, Ill., manufacturer of coffee mills, toys, cork pullers and other hardware specialties, has doubled the capacity of its plant during the past year. Further additions are also contemplated.

The Narragansett Machine Company, Providence, R. I., engineer and machinist and manufacturer of gymnasium outfits, lockers, &c., is increasing the capacity of its plant to produce 1000 lockers a week. This the company hopes will enable it to catch up with orders for this line, which have been very heavy.

The Avery Stamping Company, Cleveland, Ohio, reports exceptionally large sales of Never-Break steel ware. This very satisfactory condition is attributed in large measure to the energetic advocacy by hardware merchants of the use of high grade hollow ware.

The Deming Mfg. Company has been organized in Akron, Ohio, with a capitalization of $50,000, to manufacture a new style of mower. The company has not yet selected a site, but has several in view, both in Akron and in Barberton, Ohio. The officers of the company are: Henry M. Deming, president; E. H. Blackstone, vice-president; C. A. Wild, secretary and treasurer. Later the company expects to manufacture all kinds of farm implements.

The capital stock of the Border Bolt & Nut Lock Company, Ind., has been increased from $30,000 to $75,000, and the increased funds will be expended in the purchase of additional machinery. A nut lock, invention of Charles Border, will be manufactured.

Miscellaneous.

The Krein Mfg. Company, Wapakoneta, Ohio, which is a reorganization of the Acetylene Generator & Mfg. Company, will erect additional buildings, which will be devoted exclusively to the manufacture of welded chain. The manufacture of acetylene gas generators and other sheet metal goods will be continued as before.

The Newport News Shipbuilding & Dry Dock Company expects to rebuild the large building at its yards which was recently destroyed by fire.

David L. Starr, Guy D. Wallace and John M. Kennedy of Pittsburgh have asked a charter for the Duquesne Armature Works.

The Coppock Motor Car Company has been incorporated at Marion, Ind., with $100,000 capital stock, to manufacture commercial motor cars and other motor vehicles. The directors are Harry Ward, Earl Brackett, Harry Reynolds, L. W. Coppock and W. M. Myers.

The H. S. Quick Mfg. Company, Indianapolis, Ind., is successor to H. S. Quick & Co. The company manufactures concrete stone machinery and the Monarch fastener for holding wires to cement posts. The new company has incorporated, with $10,000 capital stock. H. S. Quick is president, H. B. Burnett vice-president, and Wilber W. Harrison secretary-treasurer.

The Benoit Power Transmitting Company, Worcester, Mass., has been organized to manufacture a power transmission device, and proposes to establish a shop in Worcester. Elie A. Benoit, 24½ Portland street, is the president; Napoleon Oliver, treasurer, and Mark N. Skerrett, clerk.

The American Tool & Machine Company, Boston, is adding a second story to a portion of its foundry building at Hyde Park in order to get more foundry space. When the addition is completed there will be a rearrangement which will considerably increase productive capacity.

The Model Machine Works has been incorporated at Frankfort, Ind., with $10,000 capital stock. The directors are Joseph P. Palmer, Chalmer H. Hillis, Andrew A. Laird and P. F. Gable. The company is to manufacture and repair automobiles, &c.

The Garrett Automobile Company has been incorporated at Garrett, Ind., with $10,000 capital stock, by Chas. J. Rollins, Chas. Colgrove and Wm. Mitchell.

The Ideal Concrete Machinery Company, South Bend, Ind., manufacturer of concrete block machines, owing to the rapid expansion of its business, has been compelled to move into larger and more commodious quarters, and has removed its manufacturing plant to the buildings formerly occupied by the Bissell plow works. Approximately 65,000 sq. ft. of floor space are provided, which provides three times the facilities of the former plant. A foundry is also attached, which will be used if found necessary.

Novelli & Calcagni, Barre, Vt., are to erect a large stone-working plant in that place, the building to be 60 x 300 ft. and equipped with modern machinery.

The Jenney Safety Switch Company, Westfield, Mass., has been organized to introduce a new safety device. The company will not manufacture immediately, but will contract for the various parts and assemble them. But in the near future it is contemplated to erect a foundry, machine shop and drop forging shop at Westfield.

The following companies have recently equipped their engine rooms with White Star continuous oiling systems: New York, New Haven & Hartford Railroad, Readville, Mass.; Texarkana Gas & Electric Company, Texarkana, Ark.; Esmonde Mills, Enfield, R. I.; J. A. Roebling's Sons Company, Kinkora, N. J.; Reading Paper Mills, Reading, Pa.; Springfield Railway Company, Springfield, Ohio; Electric Developing Company of Ontario, Niagara Falls, Ont.; Rockford Malleable Iron Company, Rockford, Ill.; N. R. & P. Consolidated Coal Company, Gentry, W. Va. The Pittsburgh Gage & Supply Company, Pittsburgh, Pa., will be pleased to send literature to those interested in this modern method of economical lubrication.

The Continental Can Company is erecting a modern plant on a 7-acre site in Baltimore, Md. The company recently increased the capital stock from $500,000 to $750,000.

The Iron and Metal Trades

The buying movement in Pig Iron for forward delivery, which set in in the Central West since the opening of the year, has made further progress. It is estimated that during the past week there have been sales aggregating 100,000 tons in the Chicago District, including one block of 25,000 tons of Malleable Iron to one foundry and 10,000 tons of Foundry Iron to one machinery manufacturer. Other markets, like Cincinnati and Cleveland, are feeling the movement, the furnaces in the latter district having advanced the price to $22.

Favorable indications are coming from the Birmingham District with regard to the car situation there. It is estimated that there are piled up at the furnaces in the district between 60,000 to 70,000 tons of Pig Iron, sold and long due to be delivered, which it has been impossible to move.

Pipe makers report heavy inquiries for Cast Iron Pipe, among them being one lot of 12,000 tons for Chicago. The coming letting of 38,000 tons of Pipe for New Orleans next week, will have more than local significance. The contract is to be let in six sections, but the bulk of the Pipe is for next year's delivery. In view of the relatively high prices it is considered rather doubtful whether the whole of the work will be given out. It will be significant if it is not.

Pittsburgh reports that the supply of Steel is becoming better, so far as the open market is concerned. On the other hand, tidewater steel works have been able lately to place in the territory west of the Alleghenies some good lots at high prices.

While some large additional Steel Rail tonnage is pending, the largest single order placed was 7000 tons for the San Antonio & Aransas Pass. It is estimated that all the mills in the country have on their books orders aggregating 2,500,000 tons in addition to about 250,000 tons carried over from last year.

In Structural Material one order calling for 15,000 tons has been practically closed. Otherwise only fair sized work has come out. One of the Eastern mills has advanced its price for Shapes to 1.85c., at mill, against the usual quotation of 1.85c., at tidewater.

Eastern Bar Iron mills have been picking up some business lately in the Pittsburgh District.

The export trade goes along the even tenor of its way.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Jan. 16, 1907.	Jan. 9, 1907.	Dec. 19, 1906.	Jan. 17, 1906.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	**$26.50**	$25.50	$24.50	$18.50
Foundry No. 2, Southern, Cincinnati	**26.00**	26.00	25.00	16.75
Foundry No. 2, Local, Chicago	25.50	25.50	25.50	19.25
Bessemer, Pittsburgh	*22.85*	23.35	23.85	18.35
Gray Forge, Pittsburgh	*22.35*	22.85	22.85	17.25
Lake Superior Charcoal, Chicago	**27.00**	27.00	26.00	20.50
BILLETS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh	29.50	29.50	29.50	26.00
Forging Billets, Pittsburgh	36.50	36.50	36.50	30.00
Open hearth Billets, Phila	*33.00*	33.00	34.00	29.50
Wire Rods, Pittsburgh	37.00	37.00	37.00	34.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
O. Steel Rails, Chicago	*18.00*	18.00	20.50	16.50
O. Steel Rails, Philadelphia	*19.00*	18.75	20.00	18.25
O. Iron Rails, Chicago	*27.00*	28.00	28.00	23.00
O. Iron Rails, Philadelphia	*27.50*	27.50	27.75	24.50
O. Car Wheels, Chicago	*25.00*	25.00	25.25	19.00
O. Car Wheels, Philadelphia	23.00	23.00	23.00	18.75
Heavy Steel Scrap, Pittsburgh	*18.75*	19.00	20.00	17.00
Heavy Steel Scrap, Chicago	*17.00*	17.00	17.50	15.00
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	**1.93½**	**1.88½**	1.83½	1.83½
Common Iron Bars, Chicago	**1.81½**	1.81½	1.76½	1.80
Common Iron Bars, Pittsburgh	1.80	1.80	1.80	1.90
Steel Bars, Tidewater, New York	1.74½	1.74½	1.74½	1.64½
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.50
Tank Plates, Tidewater, New York	1.84½	1.84½	1.84½	1.74½
Tank Plates, Pittsburgh	1.70	1.70	1.70	1.60
Beams, Tidewater, New York	1.84½	1.84½	1.84½	1.84½
Beams, Pittsburgh	1.70	1.70	1.70	1.70
Angles, Tidewater, New York	1.84½	1.84½	1.84½	1.84½
Angles, Pittsburgh	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	1.65	1.65	1.65	1.57½
Skelp, Sheared Steel, Pittsburgh	1.70	1.70	1.70	1.60
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.50	2.50	2.50	2.30
Wire Nails, Pittsburgh	2.00	2.00	2.00	1.85
Cut Nails, Pittsburgh	2.05	2.05	2.05	1.75
Barb Wire, Galv., Pittsburgh	2.45	2.45	2.45	2.30
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	**24.75**	24.25	23.00	18.75
Spelter, New York	**6.90**	6.80	6.67½	6.50
Spelter, St. Louis	**6.75**	6.60	6.55	6.45
Lead, New York	6.30	6.30	6.30	5.80
Lead, St. Louis	*6.12½*	6.10	6.15	5.85
Tin, New York	*41.30*	41.55	42.37½	36.40
Antimony, Hallett, New York	*24.50*	25.00	25.00	14.25
Nickel, New York	45.00	45.00	45.00	40.00
Tin Plate, 100 lb., New York	$4.09	$4.09	$4.09	$3.69

Chicago.

FISHER BUILDING, January 16, 1907.—(*By Telegraph.*)

Whatever doubt may have existed in the trade regarding a continuation of the present high pressure during the last six months of this year has been dispelled by the heavy buying of Pig Iron for that period during the past few days. It is estimated that purchases in the aggregate amount to 100,000 tons, one Malleable interest having contracted for 25,000 tons. The Allis-Chalmers Company, Milwaukee, placed orders with several Northern and Southern furnace companies for a total of about 10,000 tons for the third quarter, and lots ranging from 3000 to 5000 tons were numerous. Inquiries that are still being figured on indicate a continued heavy movement, and Northern operators have advanced prices on Foundry and Malleable grades $1 a ton for the last half. The Massillon Iron & Steel Company, which made inquiries for 27,000 tons of Northern and Southern grades, naming an upset price of $1 a ton below the prevailing market, succeeded in securing less than 5000 tons. This reflects the general Pig Iron situation for the period extending from July to the end of the year, several local furnaces having already sold the bulk of their output for shipment during that period. A revival of activity in Plates and Shapes is also noted, one Steel car company, which is building a plant at Hammond, Ind., having given specifications to the Illinois Steel Company for 50,000 tons of this material for delivery beginning in May, when the plant will be placed in operation. The People's Gas Light & Coke Company of this city has placed an order with the Massillon Iron & Steel Company, Massillon, Ohio, for 12,000 tons of Cast Iron Pipe for shipment this year, and the city

of New Orleans will open bids next week for 38,000 tons for 1907 and 1908 delivery, to be used in the reconstruction of its water works system. This contract is to be let in six sections, and the indications are that next year's allotment will not be awarded owing to the high prices that are now prevailing.

Pig Iron.—The faith of buyers in the ability of the Pig Iron market to sustain the present high level of prices throughout the second and third quarter, and even through the whole of the second half, is evidenced by the very large tonnage that has been placed this week, which in all amounts to about 100,000 tons. One prominent furnace interest reports more than one-half of its capacity sold up through the third quarter, with deliveries extending into the last quarter. Malleable Bessemer has been sold for $22 at furnace, for the last half, but $23 is now being asked by a number of sellers. The Allis-Chalmers order, amounting to about 10,000 tons, has been placed, the tonnage being distributed among a number of sellers in lots of 2000 to 4000 tons. Some small sales of Silveries have been made at $28.90, but this price has been advanced and $29.40 is now being asked. With the evident disposition of buyers to come into the market for the last half it would seem that prices for the entire year are all established. Quotations for February and March shipments, f.o.b. Chicago, including the 45c. advance in freight rates on Southern grades, are as follows:

Lake Superior Charcoal	$27.00 to $27.50
Northern Coke Foundry, No. 1	26.00 to 26.50
Northern Coke Foundry, No. 2	25.50 to 26.00
Northern Coke Foundry, No. 3	25.50 to 26.00
Northern Scotch, No. 1	26.00 to 27.00
Ohio Strong Softeners, No. 1	26.00 to 26.50
Ohio Strong Softeners, No. 2	25.50 to 26.00
Southern Coke, No. 1	27.35 to 27.85
Southern Coke, No. 2	26.85 to 27.35
Southern Coke, No. 3	26.35 to 26.85
Southern Coke, No. 4	25.85 to 26.35
Southern Coke, No. 1 Soft	27.35 to 27.85
Southern Coke, No. 2 Soft	26.85 to 27.35
Southern Gray Forge	25.85 to 26.35
Southern Mottled	22.85 to 23.35
Malleable Bessemer	26.00 to 26.50
Standard Bessemer	25.30 to 25.80
Jackson Co. and Kentucky Silvery, 6 %	28.30 to 28.80
Jackson Co. and Kentucky Silvery, 8 %	30.30 to 30.80
Jackson Co. and Kentucky Silvery, 10 %	32.30 to 32.80

Metals.—While there are no definite advances in Copper to report, the present high prices are firmly held and the metal is scarce, the market being almost entirely bare of late, and Casting Copper difficult to get. Buying for immediate wants continues to be the rule. We quote, as follows: Casting Copper, 26¼c. to 26¾c.; Lake, 26¾c. to 27¼c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 44¼c.; small lots, 44⅜c.; Lead, Desilverized, 6.50c. to 6.60c.; for 50-ton lots; Corroding, 7.25c. to 7.35c., for 50-ton lots; on car lots, 2¼c. per 100 lb. higher; Spelter, 6.88c.; Cookson's Antimony, 28½c. and other grades, 26½c. to 27½c.; Sheet Zinc is $8.25 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 20¾c.; Heavy Copper, 20¼c.; Copper Bottoms, 19½c.; Copper Clips, 20c.; Red Brass, 19½c.; Red Brass Borings, 16¼c.; Yellow Brass, 16c.; Yellow Brass Borings, 14¼c.; Light Brass, 12¾c.; Lead Pipe, 5.50c.; Tea Lead, 5c.; Zinc, 5c.; Pewter, No. 1, 28c.; Tin Foil, 34c.; Block Tin Pipe, 27½c.

(*By Mail.*)

Billets and Rods.—The American Steel & Wire Company is practically out of the market on both Wire and Chain Rods, and its quotations of $36 to $37, Pittsburgh, for both Bessemer and Open Hearth, are merely nominal. Other producers are asking on the basis of $41 to $42, Chicago, for occasional car lots, and sales are extremely light. There is little demand for Rolling Billets at present. Forging Billets of ordinary quality are selling at $38, and still higher prices are asked according to quality.

Rails and Track Supplies.—There are no new developments in Standard Section Rails. The demand for Light Rails continues heavy. Former quotations are unchanged, and are as follows: Angle Bars, accompanying Rail orders, 1907 delivery, 1.65c.; car lots, 1.90c.; Spikes, 2.25c. to 2.50c., according to delivery; Track Bolts, 2.65c. to 2.75c., base, Square Nuts, and 2.80c. to 2.90c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 30 to 45 lb. sections, $33; 25-lb., $34; 20-lb., $33; 16-lb., $36; 12-lb., $37, f.o.b. mill. Standard Sections, $28, f.o.b. mill, full freight to destination.

Structural Material.—No contracts carrying tonnage of special importance have been placed, though the volume of specifications is on the whole satisfactory. While the stress of operations in Structural departments is doubtless lessened, there is no disposition on the part of the mills to complain of the situation. Orders for about 500 tons will be placed by the Griffin Wheel Company for the erection of additional buildings at its plant; also the sale of 300 tons is noted for the new gas plant of the Indiana Steel Company, Gary, Ind. There is no change in store prices, which are quoted at 2.05c. to 2.10c., and mill prices are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.86½c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.86½c.; larger than 6 in. on one or both legs, 1.96½c.; Beams, larger than 15 in., 1.96½c.; Zees, 3 in. and over, 1.86½c.; Tees, 3 in. and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending and other shop work.

Plates.—With the rolling capacity of the mills almost entirely sold up for many months there seems, however, to be some hesitancy regarding 1908 bookings. Notwithstanding an advance reported by some Eastern mills, the prices for this market are unchanged. We quoted for future delivery: Tank Plate, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.76½c. to 1.86½c.; 3-16-in., 1.86½c. to 1.96½c.; Nos. 7 and 8 gauge, 1.91½c. to 2.01½c.; No. 9, 2.01½c. to 2.11½c.; Flange quality, in widths up to 100 in, 1.86½c. to 1.96½c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.86½c. to 1.96½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16-in., up to 60 in. wide, 2.10c. to 2.20c.; 72 in. wide, 2.35c. to 2.45c.; No 8 up to 60 in. wide, 2.15c. to 2.25c.; Flange and Head quality, 0.25c. extra.

Bars.—While rumors of price shading may occasionally be heard, there is nothing in the present situation to warrant a change in prices, at least for this market. Orders and inquiries continue to come in without abatement of volume, and 1.81½c., Chicago, for Iron Bars is still being held. This price may be shaded as heretofore $1 a ton on desirable orders. Quotations are as follows: Iron Bars, 1.81½c. to 1.86½c.; Steel Bars, 1.76½c., both half extras; Hoops, 2.16½c., extras as per Hoop card; Bands, 1.76½c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.86½c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

Sheets.—The demand shows no decline, and for both Galvanized and Black in lighter gauges deliveries are being deferred from six to nine weeks. The demand keeps pace with the production, and for prompt shipment a premium of $1 a ton is still asked. We quote: Blue Annealed, No. 10, 1.96½c.; No. 12, 2.01½c.; No. 14, 2.06½c.; No. 16, 2.16½c.; Box Annealed, Nos. 17 to 21, 2.51½c.; Nos. 22 to 24, 2.56½c.; Nos. 25 and 26, 2.61½c.; No. 27, 2.66½c.; No. 28, 2.76½c.; No. 29, 2.86½c.; No. 30, 2.96½c.; Galvanized Sheets, Nos. 10 to 14, 2.71½c.; Nos. 15 and 16, 2.91½c.; Nos. 17 to 21, 3.06½c.; Nos. 22 to 24, 3.21½c.; Nos. 25 and 26, 3.41½c.; No. 27, 3.61½c.; No. 28, 3.81½c.; No. 30, 4.31½c.; Sheets from store, Blue Annealed, No. 12, 2.25c.; No. 14, 2.30c.; No. 16, 2.40c.; Box Annealed, Nos. 18 to 21, 2.70c.; Nos. 22 to 24, 2.75c.; No. 26, 2.80c.; No. 27, 2.85c.; No. 28, 2.95c.; No. 30, 3.35c.; Galvanized from store, Nos. 10 to 20, 3.20c. to 3.25c.; Nos. 22 to 24, 3.45c. to 3.50c.; No. 26, 3.55c. to 3.60c.; No. 27, 3.65c. to 3.85c.; No. 28, 4c.; No. 30, 4.55c. to 4.60c.

Merchant Pipe.—No cessation in the active demand that has for some time made deliveries slow and uncertain is in sight. Mills are now more concerned with the problem of facilitating deliveries than the booking of new business. Discounts on car lots, Chicago, are as follows: Black Steel Pipe, 75.35 on the base sizes, ¾ to 6 in., and Galvanized, 65.35. From store in small lots Chicago jobbers quote 72½ to 73 per cent. on Black Steel Pipe, ¾ to 6 in. Iron Pipe is held at an advance of four to five points above these prices.

Boiler Tubes.—The users requiring Tubes for immediate shipment are taking them from jobbers' stocks, as from 30 to 60 days are required for shipment from the mill. Mill quotations are as follows on the base sizes, 2¾ to 5 in., in carload lots: Steel Tubes, 66.35; Iron, 53.35; Seamless, 50.35; 2½-in. and smaller, and lengths over 18 ft., and 2½-in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are, however, unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1¼ in.	40	35	42½
1¾ to 2¼ in.	50	35	35
2½ in.	52½	35	30
2¾ to 5 in.	60	47½	42½
6 in. and larger	50	35	..

Cast Iron Pipe.—The largest inquiry now in the market is for the 1907 and 1908 requirements for the water works of the city of New Orleans, amounting to 38,000 tons. The contract is to be let in six sections, and the bulk of the tonnage is for next year's delivery. In view of the high prices now prevailing, it is extremely doubtful if this entire tonnage will be immediately placed, and there is a possibility that it will be split up, and only the needs for this year will be purchased. Other municipalities are still out of the market. We quote: Water Pipe, 4 in., $37 to $38; 6, 8, 10 and 12 in., $36 to $37; over 12 in., $35 to $36, with $1 extra for Gas Pipe.

Merchant Steel.—An active demand is keeping the mills busy, and has so far prevented their catching up on orders to any extent. Indeed, specifications have been coming in so freely that there are now larger tonnages on the

books than were shown in December. Some irregularity has been reported in Shafting, although a stiffening of values has been noted in some sections. Quotations are unchanged, as follows: Planished or Smooth Finished Tire Steel, 1.96½c.; Iron Finish, up to 1½ x ½ in., 1.91½c.; Iron Finish, 1½ x ½ in. and larger, 1.76½c., base; Channels for solid rubber Tires, ¾ to 1 in., 2.26½c., and 1⅛-in. and larger, 2.16½c.; Smooth Finished Machinery Steel, 2.01½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 2.06½c.; Cutter Shoe, 2.35c.; Toe Calk Steel, 2.31½c.; Railroad Spring, 1.96½c.; Crucible Tool Steel, 6½c. to 8c., and still higher prices are asked on special grades. Shafting, 50 per cent. off in car lots and 45 per cent. in less than car lots, in base territory.

Coke.—The scarcity of cars continues to interfere with deliveries, and $4.25 and $4.50 for 72-hr. Connellsville Coke is the price ruling for car lots at the ovens. By-Product is a little lower, being now quoted at $7.15, f.o.b. Chicago, prompt delivery.

Old Material.—Persistent offerings have had a weakening effect upon the market, which is reflected in the lower prices quoted on several grades. The Illinois Central Railroad Company will receive bids January 18 for 5500 tons. Quotations on gross ton lots, f.o.b. Chicago, are as follows:

Old Iron Rails	$27.00 to $28.00
Old Steel Rails, 4 ft. and over	19.00 to 19.50
Old Steel Rails, less than 4 ft.	18.00 to 18.50
Heavy Relaying Rails, subject to inspection, 50 lb. and under	31.00 to 32.00
Old Car Wheels	25.00 to 25.25
Heavy Melting Steel Scrap	17.00 to 17.50
Frogs, Switches and Guards	17.00 to 17.50
Mixed Steel	15.00 to 15.50

The following quotations are per net ton:

Iron Fish Plates	$23.00 to $23.50
Iron Car Axles	26.50 to 27.00
Steel Car Axles	22.00 to 22.50
No. 1 Railroad Wrought	16.00 to 16.50
No. 2 Railroad Wrought	15.00 to 15.50
Railway Springs	16.00 to 16.50
Locomotive Tires, smooth	16.00 to 16.50
No. 1 Dealers' Forge	12.50 to 13.00
Mixed Busheling	11.50 to 12.00
Iron Axle Turnings	11.00 to 11.50
Soft Steel Axle Turnings	11.00 to 11.50
Machine Shop Turnings	11.00 to 11.50
Cast Borings	8.75 to 9.00
Mixed Borings, &c.	8.75 to 9.00
No. 1 Mill	10.50 to 11.00
No. 2 Mill	9.50 to 10.00
No. 1 Boilers, cut to Sheets and Rings	12.00 to 12.50
No. 1 Cast Scrap	18.00 to 18.50
Stove Plate and Light Cast Scrap	14.00 to 14.50
Railroad Malleable	17.50 to 18.00
Agricultural Malleable	16.00 to 16.50

Pittsburgh.

PARK BUILDING, January 16, 1907.—(*By Telegraph.*)

Pig Iron.—There has been quite an active buying movement of Bessemer and Basic Iron, mostly for delivery in the second quarter of the year. We note sales of 8000 to 10,000 tons of Bessemer for April, May and June shipment on the basis of $22, Valley furnace, and 6000 to 8000 tons of Basic for same delivery at $21.50 to $21.75, Valley furnace. We also note a sale of 1200 tons of Malleable Bessemer for second quarter delivery at $22, Valley furnace, and one of 1500 tons of Malleable Bessemer for third quarter delivery at $21.50, Valley furnace. There have also been heavy sales of Foundry Iron for the last half of the year, the International Harvester Company, Chicago, and the Allis-Chalmers Company, Milwaukee, having bought a round tonnage. We quote Northern No. 2 Foundry for spot delivery at $25, Valley furnace, while for second quarter delivery $23.50 to $24 is quoted, and for last half of the year delivery $22, Valley furnace, or less has been done. There is some inquiry for Forge Iron, and we quote Northern grades at $21.50, Valley furnace, or $22.35, Pittsburgh.

Steel.—The supply of Bessemer and Open Hearth Billets and Sheet and Tin Bars is undoubtedly better, and there is now very little complaint from consumers over tardy deliveries. We quote 4 x 4 in. Bessemer Billets at $29.50 to $30, Pittsburgh. We quote Sheet and Tin Bars in random lengths about $32, Pittsburgh, an advance of 50c. a ton being charged for Cut Bars.

(*By Mail.*)

A feature of the situation is that the supply of Steel, comprising Bessemer and Open Hearth Billets and Sheet and Tin Bars, is undoubtedly better, and there is not much complaint from consumers over delayed shipments. Some of the leading makers of Steel are now willing to entertain offers that a month or so ago they would have turned down. The extremely favorable weather has allowed the Steel mills to turn out a maximum output, and the supply is better than for some months. There is a good deal of inquiry for Bessemer and Basic Pig Iron, mostly for second quarter delivery, and considerable tonnage has been sold for this delivery on the basis of $22 for Bessemer and $21.50 to $21.75 for Basic. There are also inquiries in the market for a large tonnage of Foundry Iron, the International Harvester Company and the Allis-Chalmers Company having bought heavily for second half of the year delivery. The volume of business in Finished Iron and Steel holds up remarkably well, with the single exception of the medium sizes of Structural Steel, on which the mills are short of specifications. Prices of Scrap are somewhat easier, but best grades of Connellsville Furnace and Foundry Coke are scarce for prompt shipment and bring high prices.

Ferromanganese.—The market is quiet, and we quote best grades of 80 per cent. foreign Ferro at about $82, Pittsburgh. On a firm offer and for extended delivery this price would be shaded.

Muck Bar.—There is some inquiry, and the market is firm. Offers of $35, Pittsburgh, for Bar made from all Pig Iron have been refused. We quote best grades, made from all Pig Iron, at $36, a local broker reporting a sale of 2000 tons at this price. Bar made from part Scrap is held at about $32, Pittsburgh.

Skelp.—Specifications on contracts are coming in freely, and Skelp for prompt delivery is hard to obtain. Prices are firm, and we quote: Grooved Steel Skelp, 1.65c. to 1.70c.; Sheared Steel Skelp, 1.70c. to 1.75c.; Grooved Iron Skelp, 1.75c. to 1.80c.; Sheared Iron Skelp, 1.85c. to 1.90c., Pittsburgh, these prices depending on widths and gauges.

Steel Rails.—Inquiries were in the market last week for upward of 150,000 tons, but so far practically none of this tonnage has been placed. Inquiries for Light Rails the past week were heavier than the week before, and the market is firm. We quote Light Rails as follows: $33 to $34 for 20 to 45 lb.; $34 to $35 for 16-lb., and $35 to $36 for 12-lb., at mill. Angle Splice Bars are held at 1.65c., and Standard Section Rails at $28, at mill.

Structural Material.—Specifications on the medium sizes of Structural Steel are lighter than for some time, and the mills could take care of much more tonnage if they had it. It is believed, however, that this falling off in tonnage will not continue for any considerable length of time. During the week the American Bridge Company took about 2500 tons of bridge work for the Atlanta & Birmingham Construction Company and about 800 tons of bridge work for the Louisville & Nashville Railroad. The Westinghouse Electric & Mfg. Company is in the market for about 2500 tons of Steel for large extensions to its works at East Pittsburgh. Prices are firm, and we quote: Beams and Channels, up to 15-in., 1.70c.; over 15-in., 1.80c.; Angles, 3 x 2 x ¼ in. thick up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3½ in., 1.80c.; Zees, 3-in. and larger, 1.70c.; Tees, 3-in. and larger, 1.75c. Under the Steel Bar card, Angles, Channels and Tees under 3-in. are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—Some of the Eastern Plate mills are quoting Sheared Plates, ¼ in. and heavier, as high as 2c., Pittsburgh, However, we do not hear of any orders having been placed at this price. New business in Plates continues heavy, and the Carnegie Steel Company is not booking any orders for delivery prior to July. Requirements of the Steel car companies are enormously heavy, and are said to aggregate upward of 3000 tons of Plates per day. Prices are firm, and we quote: Tank Plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.70c. to 1.80c., base, at mills, Pittsburgh. Extras over this price are as follows:

	Extra per 100 lb.
Gauges lighter than ¼-in. to and including 3-16-in. Plates on thin edges	$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
Plates over 100 to 110 in	.05
Plates over 110 to 115 in	.10
Plates over 115 to 120 in	.15
Plates over 120 to 125 in	.25
Plates over 125 to 130 in	.50
Plates over 130 in	1.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Firebox Steel Plates.	.20
Still Bottom Steel	.30
Marine Steel	.40

Shell Grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within 10 days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Sheets.—On the lighter gauges leading mills are from eight weeks or more behind in deliveries, and on the heavier gauges some ask premiums of $1 a ton for reasonably prompt shipment. New business being placed is not as heavy as it was last month, but stocks at the mills and in the hands of jobbers are light and incomplete. Prices are firm and we

quote: Blue Annealed Sheets, No. 10 gauge and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.35c.; Nos. 22 to 24, 2.40c.; Nos. 25 and 26, 2.45c.; No. 27, 2.50c.; No. 28, 2.60c.; No. 29, 2.75c.; No. 30, 2.85c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.55c.; Nos. 12 and 14, 2.65c.; Nos. 15 and 16, 2.75c.; Nos. 17 to 21, 2.90c.; Nos. 22 and 24, 3.05c.; Nos. 25 and 26, 3.25c.; No. 27, 3.45c.; No. 28, 3.65c.; No. 29, 3.90c., and No. 30, 4.15c. We quote No. 28 Gauge Painted Roofing Sheets at $1.85 per square, and Galvanized Roofing Sheets, No. 28 gauge, $3.15 per square for 2-in. corrugations. These prices are for carload lots, jobbers charging the usual advances.

Tin Plate.—Current business being placed is light, but leading mills are pretty well filled up for the first half of the year. We understand that on orders for third quarter delivery the mills are obtaining a premium of 10c. per box over present prices. As yet there are no indications of an advance in prices, but this may come at any time. We quote $3.90 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days, on which price a rebate of 5c. a box is allowed for carload and larger lots.

Hoops and Bands.—Practically no new business is being placed, the trade being covered by contracts at lower prices, on which specifications are coming in freely. Prices are firm, and we quote: Steel Hoops, 2c., and Bands for all purposes at 1.60c., base, half extras, as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of $2 a ton being charged for less than carloads.

Iron and Steel Bars.—Contracting for both Iron and Steel Bars is heavy, while specifications are being received very freely by the mills. On Steel Bars the mills are eight weeks or more behind on shipments, and on Iron Bars the situation is about as bad. Some of the Eastern mills are quoting on Iron Bars for delivery in the Pittsburgh District and nearby teritory, and are securing a fair amount of tonnage at somewhat lower prices than are being quoted by local mills. We continue to quote 1.80c. to 1.85c. on Iron Bars, two of the local mills holding firmly for the higher price. Steel Bars are firm at 1.60c. for indefinite delivery, while 1.65c. to 1.70c., base, half extras, f.o.b. Pittsburgh, is being paid for reasonably prompt shipment.

Railroad Spikes.—New business continues heavy, and all the Spike mills are well sold up for the next two or three months. We quote Railroad Spikes at $2.40 to $2.50 per 100 lb., for forward delivery, while for reasonably prompt shipment $2.65 to $2.75 is being quoted.

Merchant Steel.—The mills are well covered with tonnage for first half of the year delivery, but so far practically nothing has been placed for the second half. Specifications on contracts continue to come in freely and shipments by the mills are heavy, but they are still much behind in deliveries. Prices are firm and we quote: Smooth Finished Machinery Steel, 1.85c. to 2c., depending on quality; Flat Sleigh Shoe, 1.65c. to 1.75c.; Cutter Shoe, 2.15c. to 2.20c.; Toe Calk Steel, 2.10c. to 2.15c.; Railroad Spring Steel, 1.75c. to 1.80c.; Crucible Tool Steel, 6c. to 8c., for ordinary grades, and 10c. and upward for special grades. The demand for Shafting is reported active and prices are fairly well maintained. We quote Cold Rolled Shafting at 50 per cent. off in carloads and 45 per cent. in less than carloads, delivered in base territory.

Spelter.—Spelter for prompt delivery is scarce, and is bringing much higher prices than for some time. Prime grades of Western, for reasonably prompt shipment, are quoted as high as 6.80c., St. Louis, while for forward delivery about 6.70c., St. Louis, or 6.82½c., Pittsburgh, is asked.

Pipes and Tubes.—A large inquiry in the market is that of the Adrian Gas Company, which is asking bids on 65,000 ft. of 2-in., 225,000 ft. of 3-in., 40,000 ft. of 4-in. and 60,000 ft. of 5-in. New business continues heavy, and the mills are well covered for the next two or three months on the medium sizes and for a longer period on the larger sizes. Prices are firm, the extreme discount on Merchant sizes of Steel Pipe now being about 77 and 5 off and on Iron Pipe about 72 and 5 per cent. off, for ¾ to 6 in., to the large trade. Official discounts on Steel Pipe, which are shaded about one point or more to the large trade, are as follows:

Merchant Pipe.

	Jobbers, carloads. Steel.	
	Black.	Galv.
	%	%
⅛ to ¼ in.	68	52
⅜ in.	70	56
½ in.	72	60
¾ to 6 in.	76	66
7 to 12 in.	71	56
Extra strong, plain ends:		
⅛ to ⅜ in.	61	49
½ to 4 in.	68	56
4½ to 8 in.	64	52
Double extra strong, plain ends:		
½ to 8 in.	57	46

Boiler Tubes.—In the past week or two a good deal of new tonnage has come out, some of the railroads having placed large orders for Locomotive Tubes for forward delivery. The demand for Merchant Tubes is also reported better than for some time. Official discounts are well maintained as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ in.	42	48
1¾ to 2¼ in.	43	60
2½ in.	48	62
2¾ to 5 in.	55	68
6 to 13 in.	43	60

Iron and Steel Scrap.—The lull in the buying of Scrap, which has been a feature of the market for three or four weeks, still continues, and prices are a shade easier than last week. The large consumers are well covered and are inclined to believe that prices may go off still further, and as a result are not buying much except when offered material at favorable prices. A moderate tonnage has been sold in the last week, but in most cases prices were shaded in favor of the buyer. We quote Heavy Steel Melting Scrap at $18.75 to $19 for Pittsburgh, Sharon or Steubenville delivery; No. 1 Wrought Scrap, $20.25 to $20.50; No. 2 Wrought Scrap, $18.25 to $18.50; Wrought Turnings, $14.75 to $15; Old Steel Rails, short pieces, 6 ft. and under, for Open Hearth purposes, $18.75 to $19; Old Steel Rails, rerollers, $21; Bundled Sheet Scrap, $16.75 to $17; New Tin and Terne Plate Clippings, $18.75 to $19 pet net ton. Low Phosphorus Melting Stock has declined to some extent and we now quote at $22.75 to $23. Cast Iron Borings are in fair demand and we quote at $12.50. Old Car Wheels are $21; Steel Axles, $23, and No. 1 Cast Scrap, $20.75 to $21. Grate Bars are about $15.50, and Stove Plate, $16.50. All these prices are per gross ton, f.o.b. Pittsburgh, unless otherwise specified. We note sales of 1000 tons of Low Phosphorus Melting Stock on the basis of about $22.75, Pittsburgh; 1000 tons of Wrought Turnings at $14.75 to $15, 500 tons of Borings at $12.50, and about 2000 tons of Heavy Steel Scrap at $18.75 to $19, and 2000 tons of Rails, rerollers, at $21, all per gross ton.

Coke.—There is a continued scarcity in the supply of Connellsville Furnace and Foundry Coke for prompt shipment, and it brings high prices. Several consumers who recently came in the market for Furnace Coke for spot shipment paid $3.50 to $3.60 for it, while 72-hr. Foundry for prompt delivery has sold at $4.25 to $4.50 a ton, at oven. Prices are lower on contracts, and we quote strictly Connellsville Furnace Coke for first half of the year delivery at $3 to $3.25, and 72-hr. Foundry at $4 to $4.25 per ton, at oven. Coke made outside of the Connellsville region is being sold at lower prices. All records for output continue to be broken, the Upper and Lower Connellsville regions having made last week 411,936 tons.

Philadelphia.

PHILADELPHIA, PA., January 15, 1907.

The Iron and Steel markets have gained new strength, and prices to-day are higher than they have been for more than 30 years, except for a very brief period in 1880. In view of the extraordinary supply, the strength of the market is a mystery to even the most experienced men in the trade, but there is no room for question that consumption is ahead of production, although the latter is greater than at any time on record. In addition to the domestic supply we are receiving monthly shipments of 50,000 to 60,000 tons of foreign Iron, yet the scarcity for spot delivery is not ameliorated in the slightest degree. It is therefore almost impossible to give anything like close quotations, not only for early deliveries, but even those for later dates cover an unusually wide range. Uniformity seems to be out of the question, as every transaction is more or less "a law unto itself," and what one seller may do is not regarded as any criterion for what another should do. The predominating feature is that consumers want Iron. Many require it so badly that $1 or $2 per ton is not likely to stand in the way of a purchase, if satisfactory deliveries can be guaranteed. At the high prices now ruling it would be only natural to suppose that purchases for forward delivery would be somewhat restricted; but such is not the case by any means, as a very considerable proportion of the output to be made the last half of the year is already taken up, and as prices for such deliveries are gradually hardening it would seem that the demand is far from being satisfied. Almost similar conditions prevail in the Finished departments, Plates and Sheets being in specially strong demand. The only exception appears to be that good deliveries can be made of Structural Material, although this is due not so much to a falling off in demand as to the steadily increasing capacity for production. Whatever the ultimate outcome may be, there can be no question that at the present time the tendency is toward increasing firmness, and until the demand decreases or the supply increases it will be useless to expect much if any easier prices than those that now prevail.

Pig Iron.—As we have already said, prices of Pig Iron appear to be working toward higher figures. It seems hardly

possible that there can be very much demand after the continuously large sales which have been made during the past three or four months, yet there is enough to accentuate the scarcity which has been so unpleasantly felt for several months. It is out of the question to give close quotations, as those who may have a little Iron to spare make prices to suit themselves, being as lenient as possible with those who are their regular customers, but there is every variety of opinion in regard to the outlook. Some consumers are averse to engaging Iron for delivery 6, 8 or 10 months later on, yet they have some misgivings of not being able to get what they require if they fail to make provision while they can do so. There are other very large consumers who have no hesitation in covering the bulk of their expected requirements on the best terms obtainable, so as to secure themselves at once. There is also an equal division of opinion among producers of Pig Iron. Some think that if prices are going higher they have a right to avail themselves of the privilege, particularly as they might have trouble in getting buyers to take deliveries in case of a sharp decline. Other producers are willing to accept orders for any reasonable quantity at current rates, which, however, are somewhat varied. For delivery during the first quarter the range for No. 2 X Foundry would be $26.50 to $27. It might be a little more in some cases, and in others a little less, but the more recent sales indicate that $27 would be about as low as could be done. For the last half some are meeting the market freely on the basis of $24 to $24.50. Some furnaces quote 50c. more, and appear to get all the business they want. Steel making Irons are quiet but firm, latest sales being at $26, at tidewater, for several thonsand tons, shipment during the first and second quarters. The third and fourth quarters are somewhat uncertain, but $23 to $24 would be about the range. Low Phosphorus Irons are dull, and no recent sales have been reported for this locality. Middlesbrough Iron is in active demand. Two cargoes which arrived last week are being rapidly distributed, and three more due within 15 to 20 days are mostly sold to arrive at $23, on dock, which appears to be rather a low figure compared with the price for domestic Irons. Scotch Iron is selling at $25, and is taken as quickly as the vessels arrive. Shipments which were to be made during January and February are somewhat delayed by the difficulty in securing freight room, which has advanced, and will therefore add so much to the cost of importing Iron. Prices for the first half may vary from $1 to $2 or $3 more than the following quotations, which are for deliveries in buyers' yards during the last half of the year, eastern Pennsylvania or adjoining territory:

No. 1 X Foundry	$26.00 to $26.50
No. 2 X Foundry	24.00 to 24.50
No. 2 Plain	23.00 to 23.25
Standard Gray Forge	22.50 to 23.00
Basic	23.50 to 24.00
Low Phosphorus	27.25 to 27.75
Malleable	25.50 to 26.50
Middlesbrough No. 3, on dock	23.00 to 23.25
Scotch, on dock	25.00 to 25.25

Ferroalloys.—There is not much to report under this heading, and prices are not materially changed from those of last week. Ferromanganese would command about $80 spot, $78 to $79 January shipment and $74 to $75 for the last half of the year. Ferrosilicon is scarce and would probably command somewhere from $110 to $115 for spot lots.

Steel.—No very large transactions have been reported during the past few days, but prices are strong, as the requirements of consumers appear to be increasing. There is a good deal of business on hand and some inquiries are being made for additional quantities, but in view of the high cost of material there is but little chance of lower prices, and in some instances there is a disposition to quote a slight advance, although ordinary Rolling Billets can be had at about $33 to $34 and Forging Steel at $36 to $40. Specifications are satisfactory and mills are being operated to their full capacity.

Plates.—There is quite a good deal of business doing, considering the advance in prices which has been made during the last six or eight weeks. A great many orders were placed in anticipation of higher prices, but there is considerable business at the new quotations, which are 2.13½c. for carload lots for ¼-in. Plates, subject to the usual extras. Mills are running to their full capacity, and prospects could hardly be more satisfactory than they are at the present time. Quotations as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	2.13¼	2.18¼
Flange or Boiler Steel	2.23½	2.28½
Marine	2.53½	2.58½
Locomotive Firebox Steel	2.63½	2.68½

The above are base prices for ¼-in. and heavier. The following extras apply:

	Extra per 100 lb.
3-16 in. thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00

Structural Material.—Reports in regard to this class of material must necessarily be somewhat monotonous, as prices have remained unchanged for many months. This is no doubt due to the immensely increased capacity for production, and although there is no scarcity of business, manufacturers seem unwilling to advance prices, which remain at 1.83½c. to 2c. for Beams, Angles and Channels, according to specifications.

Bars.—There is a good demand for both Iron and Steel Bars and 1.93½c. is readily obtained for first-class Refined Iron. Steel Bars are nominally a tenth below that figure, but deliveries are much behind, so that to get deliveries within 30 or 60 days prices have to be made equivalent to those for the Best Refined Iron. Specifications are satisfactory and mills in most cases are running to their full capacity.

Sheets.—The demand for Sheets is fully maintained, and mills find considerable difficulty in making deliveries as promptly as desired. Stocks are being drawn upon to some extent so as to satisfy the requirements of those who need immediate deliveries. The situation is therefore entirely satisfactory to manufacturers. Prices are as follows for mill shipments and a tenth additional for smaller quantities: Nos. 18 to 20, 2.80c.; Nos. 22 to 24, 2.90c.; Nos. 25 to 26, 3c.; Nos. 27, 3.10c., and No. 28, 3.20c.

Old Material.—The tone of last week's report was probably weaker than was actually warranted by the existing conditions, although there is no doubt that the demand was and is less urgent than during the two or three weeks immediately preceding. The strength of Pig Iron is having some influence in preventing a decline in the prices of Old Material, so that holders are less willing to make concessions than they were a week ago. Sales of No. 1 Steel have been made at $18.75, but prices are more or less nominal pending further developments. Bids and offers for material delivered in buyers' yards are about as follows:

Steel Crops	$19.00 to $19.25
No. 1 Steel Scrap	18.75 to 19.00
Low Phosphorus	22.75 to 23.25
Old Steel Axles	22.00 to 23.00
Old Iron Axles	31.00 to 32.00
Old Iron Rails	27.00 to 27.50
Old Car Wheels	23.00 to 23.50
Choice No. 1 R. R. Wrought	23.00 to 23.50
No. 1 Yard Scrap	20.50 to 21.00
Long and Short	19.00 to 19.50
Machinery Scrap	21.50 to 22.00
Wrought Iron Pipe	16.00 to 16.50
No. 1 Forge Fire Scrap	17.00 to 17.50
No. 2 Light	12.00 to 12.50
Wrought Turnings	16.00 to 16.50
Axle Turnings	17.00 to 17.50
Stove Plate	16.50 to 17.00
Cast Borings	13.25 to 13.75
Grate Bars	15.50 to 16.00

The firm of Henry A. Hitner's Sons, old materials, has been incorporated and has received its charter. The corporation will be known as the Henry A. Hitner's Sons Company and is capitalized at $300,000, all paid in. The firm is one of the oldest in its line in Philadelphia. Joseph G. Hitner has been elected president of the company.

Birmingham.

BIRMINGHAM, ALA., January 13, 1907.

Pig Iron.—The feature of the week is the improvement in the car situation. While this is not yet all that could be desired, conditions are so much better than for the past three months as to have a certain bearing on the market. Especially is this noticeable in spot Iron, which is now being offered at $22.50 by one of the large producers. Quotations for future delivery remain about the same as last week, prices for second quarter ranging from $21 to $22, and for last half, $18.50 to $19, with producers preferring to book business for the entire last half rather than for third quarter alone. Buying has been confined to small lots of 100 to 500 tons, the largest single order reported being one of 5000 tons from Chicago territory. A called meeting of the Southern Iron Committee was held here this week to hear the protest of the producers regarding the proposed advance in freight on February 1. Although every effort was made to have their former action rescinded, the railroads were firm in their demands and the advance of 25c. per ton will become effective as originally published. The labor situation is gradually improving, and the furnaces in the district have started off with a determination to make this the banner year. The foundries are all running to their full capacities, with plenty of orders on hand, and while the production will be larger there will likewise be a corresponding increase in consumption.

Cast Iron Pipe.—The hundreds of inquiries for Water and Gas Pipe from the small municipalities throughout the country show, as perhaps nothing else could, the general prosperity we are enjoying. These vary from a few carloads for extension purposes to sufficient to install small plants complete, and while no individual order is very large, in the aggregate the tonnage now being placed by this class of consumers runs well up into the thousands of tons. Quotations on Water Pipe remain unchanged and the market

is firm at the following prices: 4 to 6 in., $35; 8 to 12 in., $33; over 12-in., average $30, with $1 per ton extra for Gas Pipe. The demand for Soil Pipe exceeds anything ever known for this season of the year. Manufacturers here have no stocks on their yards, and are from two to three months behind with their orders.

Old Material.—There is no sign of a let up in the demand for all grades of Scrap and dealers are moving it as rapidly as it can be accumulated. Heavy Cast is still the leading seller, but there has been considerable inquiry during the past week for Steel and Wrought. The market is firm, with quotations about as follows per gross ton, f.o.b. cars dealers' yards here:

Old Iron Rails	$22.00 to $22.50
Old Iron Axles	19.50 to 20.00
Old Steel Axles	17.50 to 18.50
Old Car Wheels	19.50 to 20.00
No. 1 Railroad Wrought	20.00 to 20.50
No. 2 Railroad Wrought	15.50 to 16.00
No. 1 Country Wrought	15.50 to 16.00
No. 2 Country Wrought	12.50 to 13.00
Wrought Pipe and Flues	13.00 to 13.50
Railroad Malleable	14.00 to 14.50
No. 1 Steel	15.00 to 15.50
No. 1 Machinery Cast	16.00 to 16.50
Stove Plate and Light Cast	12.00 to 12.50
Cast Borings	8.75 to 9.25

Cincinnati.

FIFTH AND MAIN STS., January 16, 1907.—(*By Telegraph.*)

Pig Iron.—Market conditions generally are strong, indicating a continuance at least for some months. The bulk of the business done during the week has been for third quarter and last half delivery, and comprises quite a considerable tonnage. These transactions apparently have been consummated in most instances by some of the heavy melters throughout the country, which would seem to indicate that they are anticipating no sudden change in prices, but on the contrary expect them to be maintained about as they are at present. The situation in the South, so far as available railroad equipment is concerned, is no better, and while there was some little relief experienced for a few days it was but temporary. Several of the Southern lines have placed an embargo on all freight coming from connections which may possibly delay shipments still longer, although it is assumed that strenuous efforts will be made by the carriers to move as much of the delayed contract Iron as is possible before the first of the month, at which time the rate is advanced 25c. per ton. The schedule for Southern Iron is unchanged, second quarter still being quotable from $21 to $22 and third quarter and last half from $18.50 to $19, Birmingham. There is no change in the Northern situation and very little Iron is said to be available for delivery prior to July 1. High Silicon Irons are in strong demand and command top market prices. We note inquiries for 5000 tons of various Foundry grades for last half; for 3600 tons of Malleable, same delivery; for 7000 tons of Basic, third quarter delivery, and for 1500 tons of High Silicon, for last half delivery, with quite a number ranging from 200 to 500 tons. Freight rates from Hanging Rock District to Cincinnati are $1.15, and from Birmingham, $3. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$26.50 to $27.00
Southern Coke, No. 2	26.00 to 26.50
Southern Coke, No. 3	25.50 to 26.00
Southern Coke, No. 4	25.00 to 25.50
Southern Coke, No. 1 Soft	26.50 to 27.00
Southern Coke, No. 2 Soft	26.00 to 26.50
Southern Coke, Gray Forge	23.00 to 23.50
Southern Coke, Mottled	22.00 to 22.50
Ohio Silvery, 8 per cent. Silicon	31.15 to 31.65
Lake Superior Coke, No. 1	26.65 to 27.15
Lake Superior Coke, No. 2	26.15 to 26.65
Lake Superior Coke, No. 3	25.65 to 26.15

Car Wheel Irons.

Standard Southern Car Wheel	$29.00 to $29.50
Lake Superior Car Wheel	27.50 to 28.00

Coke.—The available supply is sufficient, and shipments appear to be moving forward with a fair degree of regularity. Prices are firm and general conditions are satisfactory. We quote $4.25 to $4.50, f.o.b. ovens, for best brands of Foundry Coke, from Connellsville and Virginia regions.

Finished Iron and Steel.—Contracts are coming forward in good shape and conditions appear to be eminently satisfactory. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.93c., with half extras; the same, in smaller lots, 2.10c., with full extras; Steel Bars, in carload lots, 1.73c., with half extras; the same, in smaller lots, 1.95c., with full extras; Base Angles, 1.83c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, ¼-in. and heavier, 1.83c., in carload lots; in smaller lots, 2c.; Sheets, 16 gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14 gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, 1 x ¼ in. or heavier, 1.93c., in carload lots.

Old Material.—The demand for Scrap continues strong, with prices holding fairly well. Consumption is heavy and little is being piled by dealers. We quote dealers' prices, f.o.b. Cincinnati, as follows:

No. 1 Railroad Wrought, net ton	$17.75 to $18.25
Cast Borings, net ton	9.50 to 9.75
Steel Turnings, net ton	11.75 to 12.75
No. 1 Cast Scrap, net ton	16.75 to 17.75
Old Iron Axles, net ton	26.75 to 27.75
Old Iron Rails, gross ton	27.00 to 27.50
Old Steel Rails, long, gross ton	19.25 to 20.25
Relaying Rails, 56 lb. and up, gross ton	28.75 to 29.75
Old Car Wheels, gross ton	22.75 to 23.25
Low Phosphorus Scrap, gross ton	21.25 to 21.75

Jerome Keeley, Jr., resigned as salesman for the Republic Iron & Steel Company January 1 and is succeeded by Elliott Knight, formerly of Birmingham, Ala. He will represent this company, with headquarters at Cincinnati.

Cleveland.

CLEVELAND OHIO, January 15, 1907.

Iron Ore.—Inquiries are in the market for Ore for delivery before navigation opens from furnaces that fear a shortage. There is an apparent shortage in some grades, and furnacemen are offering to pay extra switching or freight charges if necessary to get Ore to help fill out. Any one having non-Bessemer Ore of good quality on the docks that he does not want can get next season's prices for it, and possibly a slight premium over those prices. As far as can be learned there is no Bessemer Ore left for sale for next season, the entire expected output having been contracted for. There is some non-Bessemer that has not yet been contracted for, but it is not of the best quality. Siliceous Ores, which had previously been inactive, have started to move, quite a number of sales having been made during the week. Ore is now moving quite freely from the docks, and it is expected that they will be pretty well cleaned up before navigation opens. Quotations at Lake Erie docks are: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range non-Bessemer, $4.25; Mesaba non-Bessemer, $4; Siliceous Bessemer, $2.75; Siliceous non-Bessemer, $2.50.

Pig Iron.—The buying movement for the last half of 1907 delivery, which has been quite active for some time, was much heavier than previously the past week, and large sales were made both of Northern and Southern Iron, with numerous inquiries still in the market. Prices are firmer on Northern Foundry Iron, the minimum price being 50c. higher than a week ago. For last half delivery dealers are now asking from $22 to $24, Valley furnace, for Northern Foundry No. 2, although no sales are reported at the latter figure. There are still some inquiries for first half Foundry Iron, although for that delivery consumers seem to be pretty well covered. The market for the last half is so strong that some dealers predict that for late purchases foundrymen will have to pay more than they have had to pay for prompt shipment Iron for the first half. A number of sales of spot Iron at fancy prices have been made here the past week. A small lot of Basic Iron was sold at a trifle over $27, and small sales of No. 2 Foundry were made as high as $28. Other small sales are reported at $26 and $27. A carload lot of No. 1 Southern was sold for $27.85 for prompt delivery, and a sale of No. 2 Foundry was made at $23.85 for the third quarter. No foreign Iron is now offered for immediate delivery, the available supply having been sold. Local dealers are quoting foreign Iron at $25.50 to $26, Cleveland, and promise shipment from Philadelphia about February 1. No Southern Iron is offered for the first half. The sales that have been made during the week were at $18.50 to $19, Birmingham, for last half. Quotations for the last half, 1907, f.o.b. Cleveland, are as follows:

Northern Foundry, No. 1	$23.00 to $23.50
Northern Foundry, No. 2	22.50 to 23.00
Northern Foundry, No. 3	22.00 to 22.50
Southern, No. 2	22.85 to 23.35
Gray Forge	21.50 to 22.00

Coke.—The market is strong, with no change in prices. Foundrymen report considerable delay in deliveries because of the continued car shortage. Foundry Coke is selling at $4.25 at the ovens for prompt shipment and for the first half. Furnace Coke is selling at $3.50 to $3.75 at the ovens.

Finished Iron and Steel.—The general situation is slighly easier than a week ago. Prices remain just as firm, but new buying orders have not been quite as heavy in some lines. While deliveries are no worse, they do not seem to be any better. Heavy specifications on contracts for Sheets and Plates have come in during the week. Premiums are still paid for prompt deliveries. For Plates the mills are asking all kinds of prices, ranging from 1.70c. to 2c., Pittsburgh. Some sales were made at the maximum price for deliveries within 10 days to three weeks. Sheared Plates are not so scarce as Universal. Deliveries can be secured on orders for the former in four to six weeks. Heavy sales of Bars are reported and prices are steady. Steel Bars are selling on the basis of 1.60c., Pittsburgh, with a premium of $2 to $4 a ton for delivery in two to four weeks. Local warehouses are getting 1.95c. for Steel Bars out of stock, their price being unchanged. Iron Bars are being sold on the basis of 1.80c., Pittsburgh, with a premium for prompt delivery, and local jobbers are getting 2c. for them out of stock. The mills are filled with orders for both Iron and Steel Bars, and deliveries are about three months behind. Some Bars have been sold for the last half,

but the mills are not anxious to sell. Forging Billets are rather quiet and not much buying is reported. Some sales have been made at $38 to $39, Cleveland, for car lots. Structural Material is a little more active and considerable has been sold in small lots during the week. Sheets are strong and active, and the mills seem to be getting a little further behind with their orders. The rumor that there is likely to be another raise in the price of Sheets is again current among local dealers. No change is noted in local warehouse prices of Sheets. They are: Blue Annealed, No. 10, 2.25c.; No. 28 One Pass Cold Rolled, 2.90c.; No. 28 Galvanized, 3.90c.

Old Material.—The market has grown still weaker, contrary to the expectation of the dealers that it would recover after the holidays. There seems to be plenty of material of all kinds, but the demand is light and there has been very little selling during the week. Old Iron Rails and Heavy Melting Steel have declined about $1 a ton. In other lines dealers are holding up prices. The following are dealers' prices to the trade per gross ton, f.o.b. Cleveland:

Old Steel Rails	$18.00 to $18.50
Old Iron Rails	25.00 to 26.50
Steel Car Axles	21.50 to 22.00
Old Car Wheels	21.50 to 22.00
Heavy Melting Steel	17.00 to 18.00
Railroad Malleable	19.00
Agricultural Malleable	16.00
Light Bundled Sheet Scrap	12.00 to 13.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles	$29.75 to $30.25
Cast Borings	10.50 to 11.00
Iron and Steel Turnings and Drillings	13.00 to 13.50
No. 1 Busheling	16.00
No. 1 Railroad Wrought	18.50 to 19.00
No. 1 Cast	18.50 to 19.00
Stove Plate	15.00 to 16.00
Tin Scrap, at factory	20.00

New York.

NEW YORK, January 16, 1907.

Pig Iron.—So far as larger transactions are concerned the market has been rather quiet, and in moderate lots there has been more movement in New England than in this territory. A small quantity of spot Iron is being marketed. Foreign metal being chiefly used to cover it. We quote spot Northern Iron, in small lots, the only available, $26.50 to $27 for No. 1 X, tidewater, and $25.50 to $26 for No. 2 X. For the first half we quote $26 to $26.50 for No. 1 Foundry, $24.50 to $25 for No. 2 Foundry and $24 to $24.50 for No. 2 Plain, tidewater delivery. For the second half we quote $23.50 to $24 for No. 2 Foundry. No. 2 Middlesbrough is $22.50 to $23, on dock, and Scotch $24.50 to $25, on dock.

Steel Rails.—The Rail business has settled into rather narrow lines, and whereas in the early weeks of 1906 large tonnages were coming in, now only small contracts are reported, a fair share of them being for trolley lines. In the past week the San Antonio & Aransas Pass has bought 7000 tons, the Chesapeake & Ohio 1000 tons, the Aberdeen & Rockfish 3000 tons, the Indiana Railway 2000 tons and the Jersey Central Traction 1200 tons, while miscellaneous orders amount to 3000 tons. Additional orders would come from the larger roads, it is stated, if deliveries could be arranged as desired. For the most part, new business hereafter taken for 1907 must find rolling space in the last four months of the year. The estimate is made that 2,500,000 tons originally booked as for 1907 is now ahead of the mills, in addition to 250,000 to 300,000 tons carried over from 1906.

Structural Material.—Some of the fabricating companies report that conditions are quieter, and the lessened rate at which specifications have been reaching most of the mills in recent weeks is testimony to the same effect. However, the amount of business the bridge companies are figuring on gives good promise, and Structural Steel companies speak confidently of the immediate future and of the year. The new Structural mill of Milliken Brothers on Staten Island rolled its first Shapes this week, starting on 6 x 6 in. Angles. An eastern Pennsylvania Structural mill has advanced its prices to a basis of 1.85c. at mill, which amounts to an advance of $1.80 a ton on shipments to New York. A fair run of railroad bridge business is noted for the past week, including 1300 tons for the Big Four, 2400 tons for the extension of the Pennsylvania Railroad in New Jersey to reach its new terminal via Hudson River tunnels, 1250 tons for the Cleveland Short Line; 1500 tons for the Great Northern and several small contracts for the Ontario & Western. The above business was distributed among the various bridge companies, there being rather close competition in some cases. A 15,000-ton Chicago contract has practically been placed, but some details remain to be arranged. San Francisco rebuilding adds its quota, Milliken Brothers having taken two buildings, amounting to 1000 tons. The same firm has the Beck Building, Portland, Ore., 700 tons, and the Moore Building, San Antonio, Tex., 700 tons. The World Building extension in New York City, 2000 tons or more, has been awarded to Post & McCord. We continue quotations on mill shipments, tidewater delivery, as follows: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb Angles and Deck Beams, 1.99½c. On Beams 18 to 24 in. and Angles over 6 in. the extra is 0.10c. Sales out of stock of material cut to length are at 2¼c. to 2½c.

Bars.—While most of the Bar Iron business now being placed comes within the range of 1.84½c. to 1.89½c., tidewater, occasional sales are reported at a shade under the lower price. It is claimed that such concessions are not being made by any of the principal Bar Iron manufacturers and do not apply to a general assortment of sizes. With the present cost of labor and raw materials it is quite obvious that even 1.84½c. hardly nets the mills any profit. The competition of Steel Bars is quite keen, as reasonably early deliveries are promised on Steel Bars offered at 1.74½c., tidewater. The Bolt and Nut business, which constitutes a very important channel for the consumption of Bar Iron, is in remarkably good shape, the factories being so crowded with work that prospects appear excellent for a maximum output for practically the whole of the current year.

Plates.—As far as can be ascertained, the local market is quiet. Eastern mills continue to quote 2.14½c., tidewater, and take an occasional order at this price for prompt delivery. The Western mills are still quoting 1.84½c., tidewater, but are unable to make as prompt delivery as the Eastern mills. While the Western mills are more favorably situated in regard to taking orders for future delivery it is not believed that much local business of this kind is at present being offered. Large buyers are quite well covered with contracts placed at lower prices some time ago. The range of quotations, tidewater delivery, taking the low price on long deliveries of Western mills and the rate made by Eastern mills, is as follows: Sheared Tank Plates, 1.84½c. to 2.14½c.; Flange Plates, 1.94½c. to 2.24½c.; Marine Plates, 2.24½c. to 2.44½c.; Firebox Plates, 2.75c. to 3.50c., according to specifications.

Cast Iron Pipe.—The city of Worcester, Mass., placed an order the past week for about 800 tons, ranging from 24-in. down, on which bids were received from probably half a dozen different manufacturers, all of whom named full prices, with one exception. The fact that so many of the manufacturers are close together indicates an exceptionally good condition of the industry. Inquiries keep up very well, a good volume of business being booked from day to day. The city of Corning, N. Y., will receive bids until January 23 on 1488 tons of Pipe from 6 to 14 in., 100 fire hydrants and 125 gate valve sand boxes. It is not believed that any of the foundries is in a position to take the New Orleans contract as a whole. Quotations for general business continue to range from $35 to $35.75 per net ton on 6-in. at tidewater.

Old Material.—Foundry Material leads the list as far as demand and prices go. Old Car Wheels are in strong demand and command higher prices. No. 1 Heavy Cast and Stove Plate have been disposed of in the past few days at prices 25c. per ton higher than previous quotations. Cast Borings and Heavy Steel Turnings have sold at 50c. per ton higher than last prices quoted; No. 1 Railroad Wrought at prices equal to $23 per gross ton on cars, eastern Pennsylvania; Heavy Melting Steel Scrap at full quoted prices. The situation is peculiar, in the fact that while some people are talking of prices being lower, at the same time certain of the principal brokers in New York, Philadelphia, Pittsburgh and Chicago have sold large tonnages of Heavy Melting Steel Scrap at full recently prevailing prices and for delivery through the first six months of this year. This apparently would not indicate any weakness. The stocks of Heavy Melting Steel Scrap in this vicinity were never as low as at present, and if the Steel mills which have bought the material from the brokers should demand delivery of the stock prices would more likely go higher than lower, as most of those who made the sales have little or none on hand. If some severe weather should set in the prices of all Scrap would likely advance. All the Steel works and rolling mills in the East are full of work, and in nearly all cases have contracts for their products which will enable them to run full for at least four months, while some have contracts which will carry them at least six months. We note quite a number of excellent sales of Old Material, one of the principal local houses having made contracts since our last report totaling over 15,000 tons. Among the sales were 2000 tons of Cast Borings and 2500 tons of Heavy Steel Turnings for delivery over the first half; 2000 tons of No. 1 Machinery Cast and 1000 tons of Stove Plate for January, February and March; 1000 tons of No. 1 Railroad Wrought for immediate delivery, and 5000 tons of Heavy Melting Steel Scrap for delivery from January to April. All these lots were sold at full prices. Approximate quotations per gross ton, New York and vicinity, are as follows:

Old Girder and T-Rails for Melting	$16.25 to $16.75
Heavy Melting Steel Scrap	16.25 to 16.75
Old Steel Rails, rerolling lengths	18.50 to 19.00
Relaying Rails	28.00 to 29.00
Old Iron Rails	24.50 to 25.00
Standard Hammered Iron Car Axles	28.50 to 29.50
Old Steel Car Axles	21.00 to 22.00
No. 1 Railroad Wrought	21.50 to 22.00
Iron Track Scrap	18.50 to 19.50

No. 1 Yard Wrought, long	18.50 to	19.00
No. 1 Yard Wrought, short	18.00 to	18.50
Wrought Pipe	14.50 to	15.00
Light Iron	11.00 to	11.50
Cast Borings	10.50 to	11.00
Wrought Turnings	14.50 to	15.00
Old Car Wheels	22.50 to	23.00
No. 1 Heavy Cast, Broken up	18.50 to	19.50
Stove Plate	15.50 to	16.00
Grate Bars	14.00 to	14.50
Malleable Cast	18.00 to	19.00

Metal Market.

NEW YORK, January 16, 1907.

Pig Tin.—The market has been rather quiet, the decline in prices, which was steady, not stimulating much inquiry from consumers. On the 10th Tin was sold at 41.37½c., and since then sales have been made daily at 41.25c. Buyers apparently have little or no confidence in the market, and continue to pursue a policy of buying only as their needs warrant. In some quarters the present low prices are said to be the outcome of an attack upon the larger holders, but a majority of the London houses look for higher prices. The London market is steady to-day, spot being quoted at £189, with futures at £190. The arrivals so far this month are large, amounting to 1745 tons, and there are afloat for American ports 2060 tons. Tin was sold on the New York Metal Exchange to-day at 41.30c.

Copper.—Higher prices are again recorded for all grades of Copper and the bulk of business is being placed at 24.75c. to 25.25c. for Lake, 24.50c. to 25c. for Electrolytic and 24.50c. to 24.75c. for Casting grades, net cash. For prompt and nearby delivery fancy premiums above these prices are being paid. There has been a fair amount of business for forward shipment, but the larger producers are pretty well sold up. The reports of increasing producing capacity are being denied as too insistent to find ready acceptance among those better informed in trade matters. It is now over two years since Copper has been held at 15c. and over, and this has naturally stimulated a desire on the part of producers to increase their capacity. The length of time required to make a Copper mine produce is, as is well known, from two to three years, and oftentimes longer, but an increased output during the latter half of the present year is confidently expected. Exports are being closely watched, as the statistics concerning imports and exports are the only ones available having any bearing on the present situation. The exports for the first 14 days of January amounted to but 7339 tons. The European market has again advanced to higher levels and spot is now quoted at £108, futures at £108 12s. 6d., with Best Selected at £114.

Pig Lead.—Spot Lead in this city is scarce, and although a small amount might be found at 6.30c. to 6.35c., it is doubtful if any large supply could be had at this figure. Shipments from the West can be had at 6.25c. to 6.27½c., and the St. Louis market is firm and unchanged at 6.12½c. Prices in London continue high, £19 17s. 6d. being quoted for Soft Spanish Lead. It may be that Lead for American consumption will soon be taken out of bond, as it is difficult to obtain much Lead in the foreign market, as it is also scarce there. The American Smelting & Refining Company is much behind in the matter of deliveries; its terms continue unchanged, and price governing old contracts remains at 6c.

Spelter.—Spot stocks are almost unobtainable, and prompt shipments are also scarce. In New York 6.90c. to 6.95c. is freely paid for prime Western brands, and the price in St. Louis is also higher at 6.75c. In London the market is firm at £27 12s. 6d.

Antimony.—Prices are easier, 25.50c. being asked for Cookson's and 24.50c. for Hallett's, while outside brands can be had at 23¾c. to 24¾c. For a large order it is probable that concessions would be made from these prices.

Ferroalloys.—Stocks of Ferrosilicon seem to be much reduced and prices are firm, $110 to $112 being generally quoted for 50 per cent. There is little demand for futures, but small concessions are being made for forward deliveries. Seventy-five per cent. Ferrosilicon is held at the unchanged price of $150. Ferromanganese is somewhat stronger, but there is little demand for it at $78. Ferrochrome has advanced slightly and $160 to $200 is quoted, varying according to the Carbon and Chromium contents.

Old Metals.—The heavier grades of Scrap are slightly higher in price, but even the dealers' selling prices quoted below are subject to considerable variation, according to the urgency of buyers' requirements:

	Cents.
Copper, Heavy, Cut and Crucible	23.00 to 23.50
Copper, Heavy and Wire	22.25 to 22.75
Copper, Light and Bottoms	20.00 to 20.50
Brass, Heavy	16.25 to 16.50
Brass, Light	13.50 to 13.75
Heavy Machine Composition	20.50 to 21.00
Clean Brass Turnings	14.75 to 15.25
Composition Turnings	17.50 to 18.00
Lead, Heavy	6.00
Tea Lead	5.70
Zinc Scrap	5.00

Tin Plate.—The demand for Tin Plate is not up to expectations, and those who were confidently prophesying a fortnight ago that an advance would be shortly forthcoming are not so confident now. In New York $4.09 per base box continues to be quoted, and $3.90 in Pittsburgh. Tin Plates in Swansea are 3d. up at 15s.

Iron and Industrial Stocks.

NEW YORK, January 16, 1907.

The stock market has been steady during the week, with a tendency toward higher prices. Money conditions have relaxed somewhat and interest rates on call loans have approached what might be called normal conditions, but this change has not yet led to broader speculation on the Stock Exchange. The industrials appear to be somewhat stronger than the railroads. Among the special developments of the week has been the increased strength in Cambria Steel stock, which sold up to 47⅜ at Philadelphia on Saturday. This is the highest point thus far attained by this stock. The range of prices on the New York Stock Exchange, taking the most active industrials, in the period extending from Thursday of last week to Tuesday of this week, has been as follows: Steel common 49 to 50, preferred 106 to 107⅛; Car & Foundry common 44 to 45¼; Locomotive common 73 to 74¾; Steel Foundries preferred 45¾ to 47; Colorado Fuel 54¾ to 56¾; Pressed Steel common 54½ to 57; Railway Spring common 54½ to 57½; Republic common 38¾ to 40¼, preferred 99 to 99¾; Sloss-Sheffield common 74½ to 76; Cast Iron Pipe common 48⅛ to 49⅛. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 48¾, preferred 106; Car & Foundry common 44⅝, preferred 101⅞; Locomotive common 73½, preferred 110; Steel Foundries common 10½, preferred 46½; Colorado Fuel 54⅜; Pressed Steel common 55, preferred 98⅝; Railway Spring common 55; Republic common 39, preferred 99; Sloss-Sheffield common 74; Tennessee Coal 161½; United States Cast Iron Pipe common 48½, preferred 89; Can common 5¾, preferred 54.

The Alabama Consolidated Coal & Iron Company.—The annual report of this company, covering operations for the year ending October 31 last, shows gross earnings of $3,794,863, an increase of $239,219 over the previous year. However, operating expenses and taxes were larger by $306,000, so that the net earnings fell off to $492,000, a decrease of $67,000. Following is the report for the year, with comparisons:

	1906.	1905.	Increase.
Gross earnings	$3,794,863	$3,555,644	$239,219
Operating expenses and taxes	3,302,496	2,996,183	306,313
Net earnings	$492,367	$559,461	*$67,094
Fixed charges	157,521	147,984	9,537
Balance	$334,846	$411,477	*$76,631
Preferred dividend	87,500	87,500	.....
Surplus	$247,346	$323,977	*$76,631
Previous surplus	917,764	593,787	323,977
Total surplus	$1,165,110	$917,764	$247,346

* Decrease.

The general balance sheet shows cash on hand of $113,882, as compared with $302,872 in the previous year. It also shows capital stock of $3,750,000 and bonds aggregating $2,211,000.

A special meeting of stockholders of the Standard Underground Cable Company, Pittsburgh, will be held in that city on January 22 to vote upon an increase in the capital from $2,000,000 to $3,000,000, half of which increase will be set aside for distribution among employees whom the management desires to become permanently interested in the company. This stock will be paid for out of its earnings, dividends for the last four years having been 12 per cent. per year. This plan has been approved by the directors as the best possible method to insure the highest standard of work and the greatest loyalty of employees to the firm. Of the increase $500,000 will be paid to the stockholders in new stock, constituting a stock dividend of 25 per cent. It is not the intention of the management to distribute the new stock to the employees at once, but it will be held in a fund to be given to employees who prove most worthy.

Dividends.—The United States Cast Iron Pipe & Foundry Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock and 1 per cent. on the common stock, both payable March 1.

The Wheeling Mold & Foundry Company has declared a quarterly dividend of 2 per cent. and an extra dividend of 1 per cent., both payable February 1.

The American Shipbuilding Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock.

The regular quarterly dividend of 1½ per cent. on the preferred stock of the International Pump Company will be paid February 1.

The Monongahela River Consolidated Coal & Coke Company has declared a quarterly dividend of $2.25 a share, payable January 25.

Labor Notes.

The Woonsocket Machine & Press Company, Woonsocket, R. I., manufacturer of textile machinery, shafting, &c., announces a general advance of 5 per cent. to all employees, and the promise of an additional 2½ per cent. to be paid in a lump sum on June 1 to all employees who are not absent from work, excepting for sickness, more than six days between January 1 and June 1. More than 1000 men are affected by this advance.

It is announced that the machinists employed by the Rhode Island Perkins Horse Shoe Company, Providence, have been advanced 10 per cent., with a reduction in hours from 57 to 54. This puts the machinists on the same basis as that given to the other employees of the company a few weeks ago.

The Norton Grinding Company, Worcester, Mass., has notified its apprentices of an increase in wages, which goes into effect for those already serving their time, as well as for those who will hereafter enter into contract with the company. The first year's wage will be $1 instead of 80 cents, the second year $1.25 instead of $1, and the third year $1.50 instead of $1.25. It is understood that other machine shops conducting apprentice systems have decided to increase the inducement to their young men to enter the works by the payment of larger wages. The Norton Grinding Company has also begun the sending of its apprentices to the evening drawing classes of the Y. M. C. A., paying their tuition, that they may receive the advantage of instruction in mechanical drafting.

Following up his decision of December 12, 1906, in the contempt proceedings against striking molders formerly employed by the Allis-Chalmers Company, Judge A. L. Sanborn, of the United States District Court, sitting at Madison, Wis., pronounced judgment on January 3 against a number of the defendants. As noted in the report of the original decision, given in *The Iron Age* of December 27, a number of the strikers were held guilty of contempt in having violated the injunction order. Seven strikers were sentenced to jail, the court refusing the alternative of a fine in each case. The chairman and treasurer of the Strike Committee were each sentenced to 30 days' imprisonment, a striker convicted of assault to 40 days, two pickets to 30 days and two other strikers to 15 days.

Reports to the National Founders' Association announce the return to work of a number of striking molders at plants of its members. At the foundry of the J. A. & P. E. Dutcher Company, Milwaukee, 12 strikers returned to work on January 2 and are now at work alongside independent molders. Wages and hours are the same that prevailed before the strike. Four molders at Scranton, Pa., have given up their union affiliation and returned to work in the Allis-Chalmers Company foundry. At Buffalo five union molders have been expelled from the union for returning to work. Sixteen Buffalo molders and coremakers have withdrawn from the union to go back to work.

The National Founders' Association says in a recent bulletin that in the first week in January the Iron Molders' Union called off strikes in four foundries at Indianapolis, one in Cincinnati, and one in Bay City, Mich. At New Orleans, La., the striking molders who went out in May, 1906, after demanding a $3.50 minimum and the closed shop, have accepted the foundrymen's offer to pay $3.25 a day to such men as can be given places. Union molders are now at work alongside of independent men. Two shops will remain nonunion and four will be conducted as open shops.

A movement is on foot to obtain a uniform working day and uniform rates of pay for the blast furnace workers in the middle West. The plan is to call a convention to be held in Cleveland to be attended by delegates not only from the Mahoning and Shenango valleys, but also as far east as Buffalo and as far west as Chicago. At this meeting the men will express their views as to demanding an eight-hour day and uniform rates of pay. It is proposed to organize in such a way that the stacks of the United States Steel Corporation will be as generally affected as those of the independents. The men say that with the present scarcity of pig iron owners will rather grant the demands than see their furnaces banked.

The initiations into the Iron Molders' Union in the first 11 months of 1906 are reported by the union officers to be 7441, this number including coremakers. The proposal to hold a convention of the union in July is now being voted upon. There is a strong sentiment in favor of a convention in view of the problems the organization has before it and the changes in conditions that have come since 1902, when the last convention was held.

The usual bi-monthly settlement of the wage scale for puddlers and finishers in the mills controlled by the Amalgamated Association was made last week in the offices of the Republic Iron & Steel Company, Pittsburgh. It was found that the average price of shipments of iron bars in November and December did not warrant any advance in wages of puddlers or finishers for January and February.

Wages of tin plate workers in mills controlled by the Amalgamated Association have been advanced 2 per cent., effective from January 1. It was found that the average price of shipments of tin plate in November and December slightly exceeded $3.50 per box, which entitled the men to the above advance.

Germany's Minimum Tariff to Continue.

WASHINGTON, D. C., January 15, 1907.—Advices received by the Administration from the North Customs Commission now in Berlin indicate that in no event will the maximum rates of the new German tariff be assessed on products of the United States before July 1, 1908. These assurances are based upon an informal understanding which the American commissioners, Messrs. North, Gerry and Stone, have reached with the representatives of the German Government.

When the American commissioners left for Berlin, November 1, it was assumed that the negotiations to be undertaken would not occupy more than six weeks and that the commission's report would be in the hands of the Secretary of the Treasury in time to be transmitted to the Senate when Congress reconvened after the holiday recess. Upon reaching Berlin, however, it was found that the German commissioners had arranged certain tours of the leading industrial centers of the country, and had set dates for many conferences with the representatives of local commercial organizations, &c. So much time was consumed that it became apparent that the commissioners could not return to Washington before February 1, and the State Department thereupon cabled Mr. North expressing a desire that the Commission's report be forwarded to Washington in time to reach here not later than February 15. A reply has been received in which it is stated that it may not be practicable to submit the report within the time specified, but adding that the German Government, appreciating the good faith of the United States in sending the Commission to Berlin and recognizing the difficulty of securing satisfactory legislation in the remaining days of the current short session of Congress, is willing to continue the *modus vivendi* for another year in order that an opportunity may be afforded Congress at the long session beginning December, 1907, to make a careful and thorough revision of the customs administrative laws. W. L. C.

The Machinery Trade.

NEW YORK, January 16, 1907.

Machine tool houses booked a large amount of business the past week, the orders coming from all branches of trade where iron working machinery is used and from all sections of the country. The absence of large transactions in this great volume of business is significant, in that it shows the great demand and the prosperity of the smaller shops. Speaking of the constant influx of orders each day which are continually extending deliveries, one of the important interests states the builders of standard tools already have so much work on hand that very few orders placed at the present time can be filled before next year. Of course, a machine can be secured here and there for several months' delivery, but it is a difficult matter to obtain a fair sized shop equipment. This condition of the market has caused prices to stiffen, and those who can promise reasonable delivery on a machine can get a substantial premium, so eager are buyers for equipment. The sale last week of the equipment of the W. S. Burn Mfg. Company, New Haven, Conn., plainly illustrates the demand for machine tools and the prices that can be obtained for second-hand machinery. There were 547 lots sold at auction in 330 min., and the prices paid were in many cases higher than those for new tools. A Bath grinder bought four years ago brought $100 more than the amount paid for it at that time, and Pratt & Whitney lathes brought considerably more than the list price. Some 200 people attended the sale, and the list of buyers included many manufacturers other than machine tool builders. The prices paid are given in more detail in another column. The high price of copper is causing some uneasiness in the trade, and it is feared that a further advance will tend to check the demand, especially for electrical machinery.

A machinery man who is close to railroad affairs is authority for the statement that a number of large lists can be expected within the next few weeks. It is stated that at least one large Southern railroad and two Eastern railroads are preparing lists which will be placed before the trade, it is understood, before another month rolls around.

The leading steel interest has been placing some rather extensive inquiries for machinery of late, which it is thought is for delivery in the Pennsylvania District. While the company has not a list out, it is understood that its purchasing department has been particularly active of late in making inquiries for forging equipment and the like.

In the power line just now there is considerable activity because of the closing of numerous orders that were held up over the holidays. It will be remembered that it was stated in these columns that there were a large number of inquiries awaiting action, and now it seems that there is something of a rush to close out the business. Numerous orders are being placed in the trade for power equipment, especially in the line of machinery for equipping street railroad plants.

The movement to concentrate the machinery trade in New York under one roof, which is being promoted by the Hudson Companies, whose Church street terminal building will be completed about January, 1908, is meeting with enthusiastic responses from the trade, judging from inquiries in the hands of Theodore Waters, secretary of the committee, who recently sent out inquiries asking the recipients what they thought of the plan. Mr. Waters has received about 400 replies from prominent machinery houses in all parts of the country speaking favorably of the scheme, and in most cases asking for more particulars. It is expected that a meeting of the General Committee will be held shortly to arrange the details, and it is thought that at that time subcommittees may be appointed to go into the question of establishing a warehouse in Jersey City for showroom and storage purposes. Many of those who have replied to the inquiries have made special reference to the feasibility of such a plan, and have declared their willingness to give it serious attention.

American Machinery to Be Shown in Japan.

There will be a good sized exhibition of American machinery and machine tools at a large industrial exhibit to be held at Tokio, Japan, from March 20 to June 20, next. A number of American machinery houses are arranging to send equipment there, and the Japanese engineering firm of Takata & Co., 60 Wall street, New York, will have a general assortment of machinery on exhibition from this country, which will be a model collection of its kind. This company has about 3400 sq. ft. of space, which will be given over to American and European machinery, but the equipment from this country will predominate. Among other things the lighting arrangements of the building in which machinery is exhibited will be an exhibition in itself, the equipment coming from the Westinghouse Electric & Mfg. Company. There will be five generators of 25 kw. each and some 50 or more motors of various sizes, both direct and alternating current, in addition to 100 fan motors and 30 or more transmitters. There will also be on exhibit 100 electric instruments of different types, such as are made by the Westinghouse Electric & Mfg. Company, and 50,000 ft. of copper wire of various thicknesses. There will be a model generating set, a general assortment of machine tools from various American manufacturers, and the J. G. Leymer Engineering Works Company of Littleton, Colo., will contribute a compressor and some rock drills, which will probably be shown in operation. The Hamilton Machine Tool Company, Hamilton, Ohio, has sent a carload of machinery to the exhibition and a number of other American manufacturers will contribute independent exhibits. There is no better indication of the condition of the machinery trade in this country than the fact that a number of commission houses that desired to show machinery for which they have the agency were unable in many cases to get deliveries in time to contribute to the exhibition, and many American manufacturers who would like to have had their machines shown were unable to prepare an exhibit because of the rush of business.

Large Railroad Repair Plant in New York.

A project that will call for large expenditures for machinery and for which no purchases have as yet been made is that of the Interborough-Metropolitan Company to erect a large railroad repair plant at a cost of $2,000,000 or more in the vicinity of 218th street. The company expects to build a plant with a frontage on the United States Ship Canal, and it has acquired title to enough private property in the vicinity on which to erect the proposed plant, but it has to get the pier privileges of three city streets and a clear site on which to build without street division. Accordingly application has been made to the city authorities to close a portion of Ninth avenue and a part of 218th street. The company also wishes to get the privilege of building on a street site which has never been opened, and if its plans go through it will have a clear tract of land from the line of 216th street on the south to the Ship Canal on the north and extending from Broadway on the west to the Ship Canal on the east. There has been some opposition on the part of property owners in the neighborhood, but the railroad company has argued that by closing the streets mentioned the value of the surrounding property would be greatly increased, as it is stated that no less than 1000 skilled mechanics who would be employed in the plant would have to find homes in the vicinity. At the office of August Belmont, where the details for the construction of the plant were planned, it is said that there is every assurance that the plan will go through. Preliminary plans and estimates have been made, and it is said that after authority for closing the streets in question is given building operations will be begun as soon as possible, and it is expected that before spring sets in the buying will be begun. It is understood that the plans include, besides a large machine shop, a blacksmith shop, boiler shop and everything that goes to make a complete railroad repair plant. Provision will be made for taking care of steel cars, and there will undoubtedly be large expenditures for equipment in that line.

Large inquiries for power plant equipment were received this week from the Baltimore & Ohio Railroad for the Pennsylvania and Baltimore & Ohio joint terminal at Washington, D. C. This terminal is to have a power house, 77 x 238 ft., and repair shop, 30 x 156 ft., to equip which a great deal of machinery will be required. These inquiries, with the ones sent out last week by Westinghouse, Church, Kerr & Co. for the New York terminal of the Pennsylvania Railroad, are the first good sized inquiries reported since the beginning of the year, and they indicate that the railroads are hurrying their improvements to completion in order that they may have better facilities for handling traffic.

The Pennsylvania Railroad, unlike the majority of the other roads, does not extend any inquiries for tools and machinery or new work at this season other than current requirements. The authority for the expenditures, which comes through the general manager, is not usually given until a little later in the new year, and so it is difficult to forecast with any degree of accuracy the actual equipment for which the purchasing department will be in the market. It is likely that the contemplated improvements at Greenville, N. J., including the 50-ton gantry crane for handling structural material, will be realized in this year's work. This crane will be unique and probably the first of this type to be installed, and once established it's performance will be watched with interest. As much as can be gleaned of the tool and machinery programme indicates that the year's requirements will be quite up to the quantity and value established by other years. Within a short time it is believed that a list will be ready for distribution.

The shops of the Grand Trunk Railroad, Stratford, Ont., are to be enlarged, at a cost of about $200,000.

It was learned last week with much surprise by many of the prominent machinery dealers in this city that the

Delaware, Lackawanna & Western Railroad had issued a good sized list of machinery some months ago, and that the orders had all been placed with a limited number of firms who were the only ones that received the list. It was noted in these columns several times that the railroad had issued such a list, but machinery men who inquired at the offices of the road could get no information, some of them saying that they were practically informed that no such lists were issued. They followed the matter up week after week with the expectation of receiving the specifications, and after spending much time they found the orders placed.

The Remington Oil Engine Company, room 520, 41 Park row, New York, manufacturer of stationary and marine engines, is to build a new shop at Stamford, Conn., for which a considerable lot of machine tools will be required. The building will be 40 x 80 ft. The list of machinery for which the company will be in the market follows: Vertical boring mill, 42 in.; horizontal boring mill, to bore 10 in.; toolroom grinder; milling machine, drive 8 in., with 2-in. cutter; universal milling machine, equivalent to No. 1½ Brown & Sharpe; hand screw machine, ¾-in. stock through spindle; 16-in. lathe, 14-in. lathe, 14-in. lathe for toolwork, sensitive drill press; drill press, 20-in. table; radial drill, 3-ft. arm; planer, 30 x 24 in. by 10 ft.; power hack saw; shaper, 16-in. stroke; turret machine to swing 18 in. In addition 130 ft. of 2-in. shafting, with hangers, will be needed. The company states that it is interested in both new and second-hand machinery. Power will be furnished by a Remington oil engine. Wolcott Remington is the president of the company, F. A. Rumpf vice-president and treasurer and J. A. Milligan secretary. Up to the present time the company has had its engine made by outside parties.

The Standard Steel Car Company, Pittsburgh, Pa., will shortly erect a new plant in that State. The company is considering a number of new sites and will probably locate in the vicinity of Newcastle. It is proposed as soon as the site is secured to begin work on the plant, which will necessarily be a large one, as the company is far behind in its orders.

Orders were placed in this city during the week for quite a little machinery by the Baldwin Locomotive Works, Philadelphia, Pa.

The Detroit Register Company, Detroit, Mich., whose entire plant, 200 x 700 ft., was completely destroyed by fire a few days ago, will rebuild at once and will be in the market for considerable new machinery. Most of the equipment, including polishing, plating and grinding machinery and all of the foundry equipment, except the cupola, was destroyed.

The Monroe Tool Works, 77 North Water street, Rochester, N. Y., recently organized, has taken over the business of the Mechanical Appliance Company, owned by Henry D. Taylor, which it will considerably expand. In addition to the building of special machinery and tools the company will take up the manufacture of drop forgings and the sale of tool steel. Considerable new machinery is being installed, and in addition to the orders placed the company's requirements include a power hammer, drop hammer, forges, blower, heavy grinder, cold saw and small tools. B. D. Bagley is president and treasurer; M. E. Bagley, vice-president, and H. D. Taylor, secretary.

The Keystone Driller Company, Beaver Falls, Pa., which recently bought property adjacent to its plant, is preparing plans for a new steel foundry, work on which is expected to be started within a short time. The larger part of the output will be used in the manufacture of drilling machinery.

The Selden Motor Vehicle Company recently incorporated with a capital stock of $500,000, will erect a plant in Rochester, N. Y., for the manufacture of high grade automobiles. The main factory building will be 400 ft. in length, of re-inforced concrete construction and equipped with up to date machinery. The president of the new company is George B. Selden of Rochester, who secured basic patents on the application of explosive power to the propulsion of vehicles; the vice-president is Louis A. Fischer of Buffalo, president of the Buffalo Gasoline Motor Company; secretary, R. H. Salmons, vice-president of the Rochester Valve Company, and the treasurer, Gilbert Mosier, head of the Century Camera Company of Rochester.

Power Plant Requirements.

Orders are being placed by D. E. Baxter & Co., railroad contractors, 27 William street, New York, for complete equipment for the Charleston and Somerville Electric Railway, which is having constructed a single phase railroad system from the Battery in Charleston, S. C., to Somerville, S. C., a distance of 27½ miles. The power house, which is to be a fireproof structure, will be erected about 9 miles from Charleston, and orders have been placed so far for two Snow gas engines of 800 hp. each, with a maximum capacity of 920 hp. The rest of the equipment will be arranged for shortly and D. E. Baxter & Co. have already begun the construction work, which is being pushed forward under the direction of G. S. Brantingham, manager of construction. The railroad will be largely used for freight service, as there are some large phosphate works located along the line.

W. S. Barstow & Co., 56 Pine street, New York, have two large propositions on hand that will require considerable machinery equipment, one of which is a contract to do all the electrical work in connection with the erection of an 800,000-barrel cement plant to be erected on the outskirts of Montreal, Canada, for the Fordwick Company. The engineering firm will install about 2500 hp. of electric motors, which will be driven by power to be obtained from the Shawinigan power plant, which is located 80 miles from Montreal. The Fordwick Company has a tract of land along the St. Lawrence River, and in erecting its plant it will make provision for handling and storing 40,000 tons of coal adjacent to the works. Barstow & Co. also have a contract for remodeling the present plant of the Danbury & Bethel Light Company, Danbury, Conn., which will install about 400 kw. additional capacity. The work also includes the installation of an additional steam plant building, and considerable coal storage and electrical equipment. Barstow & Co. will have charge of all the engineering as well as the supervision of the installation of the work, but it is understood that the machinery will be contracted for by the owning corporation.

The Yonkers Board of Water Commissioners, Yonkers, N. Y., will receive bids February 7 for two 225-hp. boilers for the proposed new Yonkers water works. The commissioners are also contracting for a large stack, pipe fittings, heaters and other accessories. It has not been decided as yet what style of boilers will be used.

The Hoovens, Owens, Rentschler Company, through its New York office, 39 Cortlandt street, has received orders for: One cross compound engine direct connected to 550-kw. General Electric generator for the Ansonia Hotel, New York; 250-hp. engine, Brooklyn Fire Brick Company; 300-hp. engine, E. E. & C. Thomson, Clinton, N. J.; one cross compound condensing engine direct connected to 800-kw. generator, Houston Electric Company, Houston, Texas, through Stone & Webster, Boston; a 150-hp. engine for Fisher Bros., New York, and two high speed four-valve engines for the James Leo Paper Company, Jersey City.

The Ridgway Dynamo & Engine Company has sold through McClave, Rimmer & Co., its New York agents, two 250-hp. tandem compound engines for direct connection to generators, to William H. Taylor & Co., contractors of Allentown, Pa., who are purchasing machinery for a dyeing establishment.

The Buffalo Foundry Company, Buffalo, N. Y., has ordered through the New York office of the Case Mfg. Company, 35 Liberty street, a 60-ton 64-ft. span four-motor electric traveling crane, for early delivery.

Chicago Machinery Market.

CHICAGO, ILL., January 15, 1907.

No better evidence is needed of sustained buying in machinery lines than that furnished by the continuous slowness of deliveries, which show but little improvement in any direction. The extreme of delay is exhibited most acutely, perhaps, in lines of high grade automatic and gear cutting tools, while lathes, planers, shapers and other like equipment can be supplied with more reasonable dispatch. One sale of automatic screw machines, amounting to several thousand dollars, was this week entered for delivery in June, 1908, the factory having flatly refused to book the order for shipment before that time. This is, of course, not indicative of deliveries on ordinary requirements, which as a rule extend from 60 to 90 days onward, according to the character of tools ordered. No sales of unusual magnitude were reported, the volume of trade largely being made up of comparatively small orders, a condition that seems to indicate enlargement of present producing capacity rather than marked extension in new enterprises. A strong demand is noted for heavy tools and boiler shop machinery, and while there is more or less difficulty in getting deliveries the delay is not so pronounced as in other lines, ordinary requirements being generally obtainable in about 60 days. The market for second-hand tools is unusually strong, and in several instances have almost, if not quite, reached the present quotations on new tools. Such conditions are undoubtedly due to urgency of shop needs and the consideration of spot shipment not otherwise obtainable.

The Felt & Tarrant Mfg. Company, Chicago, maker of adding machines, has recently placed orders for tools amounting to $18,000. This equipment was purchased to supply the increased capacity afforded in the new factory recently built at 856 Paulina street, Chicago. A part of this order for automatic machines was placed with the understanding that delivery could not under any circumstances be made before June, 1908.

The Wood Turret Machine Company, incorporated with a paid up capital of $20,000, is a new industry that will soon begin operations in Terre Haute, Ind., and will engage in the manufacture of turret lathes. The officers are D. W. Wood, president and manager, 337 South Forty-third street, Chicago; F. W. Hicks, secretary and treasurer; A. W.

Wigglesworth, vice-president. The plant will be ready for operation by April 1, 1907.

The Centerville Iron Works, Centerville, Iowa, has arranged to remove its plant from that place to Van Buren, Ark., where a suitable manufacturing site with buildings has already been secured. Additions to the plant are contemplated later on. A full line of mine, ore and industrial cars will constitute the product of the plant, which will in beginning have a capacity of 25 cars per day, and will be materially increased later on.

Plans have been completed and contracts are about to be let for a three-story addition to the factory of the Friedley-Voshardt Company, Mather street, Chicago, the cost of which is estimated at $15,000. Considerable machinery will be purchased.

The International Irrigation Company, Spokane, Wash., has placed an order with the Weber Gas Engine Company, Kansas City, Mo., for one 300-hp. multiple cylinder gas engine, with twin suction gas producer, which will be used to operate two turbine pumps in raising water for irrigation. Other January sales reported by the Weber Company include four gas engines and gas producer equipment, aggregating 500 hp.

Among the orders recently booked by the machinery department of Joseph T. Ryerson & Son, Chicago, are the following: Complete hydraulic riveting outfit, including crane, for the Kewanee Boiler Company, Kewanee, Ill.; rotary bevel shears, American Bridge Company, Chicago; Allen riveters for the Western Steel Car Company, Chicago; Pittsburgh, Bridge & Iron Company, Pittsburgh; Jeffrey Mfg. Company, Columbus, and the Bass Foundry & Machine Company, Fort Wayne, Ind.

The Roberts & Abbott Company, engineers, Cleveland, Ohio, have opened an office in Chicago and have placed W. D. Ball in charge. The new office is located in the First National Bank Building. Mr. Ball has been connected with a great deal of electrical and civil engineering work, principally for trolley railroads and hydraulic plants. The efforts of the Chicago offices will be along the same lines on which the Roberts & Abbott Company has specialized, interurban railways and hydraulic plants.

The American Woodworking Machinery Company, having been forced to vacate its warehouse and salesroom at 43 South Canal street, Chicago, owing to the purchase of this property by the Chicago & Northwestern Railroad, which will build a depot on this site, will erect a two-story warehouse, 80 x 150 ft., on Morgan street, near Thirty-sixth street. A full line of woodworking tools will be carried, and offices of the Chicago branch will be opened in the Fisher Building.

Philadelphia Machinery Market.

PHILADELPHIA, PA., January 15, 1907.

Advancing prices of machine tools have commanded the attention of the trade to a large extent since the first of the year. Manufacturers of various tools have announced increases recently on some lines of lathes, boring mills, drill presses and a number of the smaller tools, the latest advance noted being that on shapers. The increase averages about 5 per cent., and while the entire line of machine tools has not as yet been covered, the expectations are that they will be before the close of the month. The continued advancing prices of materials of every class entering into the construction of tools and machinery have made these advances necessary, and it has been intimated that should conditions continue unfavorable to economical construction still further advances in prices may be necessary.

As far as actual sales during the past week are concerned, there is little to say. Buying has been rather desultory and has been confined mostly to single tools. This condition, however, is not entirely unexpected at this season of the year. Many of the plants are still busy on the preparations of annual statements, on which the policy of the present year will in some cases be based to a great extent, and it is hardly thought likely that any material buying movement will set in until after February 1, although the prospective advances in some lines of tools may hasten orders somewhat, but at the present moment there is little evidence of it.

Deliveries continue the main factor, and the majority of sales depend more on the delivery date than they do on the actual selling price. Manufacturers as a rule do not seem to be able to catch up to any extent on their already long deferred deliveries. While orders have not been quite as heavy as they were some months ago, the delay in obtaining raw materials and supplies has increased, and the productive capacity of the plants therefore has not made any material advances.

Foreign demand for machine tools remains rather inactive, and both inquiries and sales have been light. Some business has been closed for special tools and machinery, while the trade in specialties is about the average for the season of the year.

Second-hand machine tools continue in good demand. The supply in some lines has improved, and dealers have been adding to their stocks quite extensively. Sales of this class of machinery have been good, and will no doubt so continue as long as it is impossible to get new tools with any degree of promptness.

Boilers and engines have had a fairly good sale. Orders for several large equipments have recently been placed, and a good volume of business is in sight. Sales of those of the medium and lower horsepowers have not been as great as the trade would like to see. Second-hand boilers of some types are in good demand and hard to get. Others, however, are in good supply, and can be had for immediate delivery. Second-hand engines do not move rapidly, and this branch of the business would stand considerable improvement.

The foundry situation shows some slight signs of improvement, but this is not general. In some cases orders are reported to have diminished slightly, while in others they are even greater than before. Machine tool manufacturers still complain of their inability to get castings, both iron and steel, with any degree of promptness. Foundries of all classes are making heavy tonnages, but in a number of instances have been temporarily held up on account of delayed deliveries of raw materials.

The local automobile show, held during the past week in the First Regiment Armory, was one of the most successful ever held in this city. There were many new types of cars shown, the mechanical features of which were of considerable interest to those engaged in that trade. Sales of all classes of cars were reported most satisfactory to the manufacturers, who are booked well ahead.

It is understood that financial arrangements have been completed for the formation of a large concern in this city, known as the Central Crystal Ice Company, for the manufacture of artificial ice. While the officials of the company refuse authoritative information, it is said that five plants will be erected in various sections of the city, known as the Central, Northern, Southern, Eastern and Western branches. Three of these will be of 100 tons daily capacity, while the others will be of considerably larger size. Efforts are being made, it is said, to get these plants in operative condition at the earliest possible moment.

The Department of Public Works, Bureau of Filtration, of the city of Philadelphia, is asking for bids under what is known as contract No. 95, on a boiler equipment for the Lardner's Point Pumping Station in boiler house No. 3. Eight boilers of the water tube type, having a capacity of 500 hp., are to be supplied, and must in all details meet the approval of the Bureau of Steam Engine and Boiler Inspection. Mechanical stokers are to be supplied with these boilers. These are to be of a standard type, suitable for the combustion of a semibituminous coal. Ash hoppers of 50 cu. ft. capacity are to be furnished with these stokers. High pressure economizers are also to be included in the bids. These are to be of the vertical cast iron tube type. Specifications and drawings regarding the above may be had at the office of the chief engineer, Room 712, City Hall, and bids will be received until noon, February 5.

The same department is asking bids, under contract No. 101, for a large number of pipe connections for use at the Torresdale Pumping Station. Specifications regarding these may be had upon application to the director, J. R. Hathaway, Room 612, City Hall, and bids will be received until noon, January 23.

The William Steele & Sons Company, contractor, has plans posted for the erection of a seven-story factory building, 70 x 319 ft., with a wing 34 x 67 ft., and a three-story office building, 53 x 67 ft., for the Riverside Mfg. Company, Riverside, N. J. These buildings are to be of brick and thoroughly fireproof. It is not known at the time whether any additional power equipment and machine tools will be required.

The Eynon-Evans Mfg. Company is very busy in every department. The company has purchased a number of tools for its machine shop extensions (previously noted in these columns), and is now in the market for a number of tools for the further equipment of its tool room, which is to be extensively increased. This company has recently taken some good orders for steam jet blowers, which are being shipped in quantity to a number of steel works as well as to large industrial plants. In its foundry it is quite busy on bronze and brass castings of various kinds, and particularly on its line of acid resisting bronze castings for mine work.

The Energy Elevator Company notes a continued good demand for its various types of elevators. Orders for several electric power freight elevators for delivery in this city, as well as in San Francisco, Cal., and Beaumont, Texas, have been recently received. Sales of hand power passenger elevators and hand power freight elevators of the larger or warehouse types have also been good, and the business seems to be equally divided between local and out of town customers. A large number of orders are on the company's books, and every department of the plant is being operated at its best capacity.

H. B. Underwood & Co. transacted during the month of December the largest business ever done in any previous month in their history. The demand covered every line of portable tools manufactured by them, and came from both foreign and domestic sources. While the railroads were large buyers of these tools, the sales to industrial plants were greatly increased. Inquiries during the past week have been good, and would indicate a continuation of the present prosperous conditions. Shipments recently include portable boring bars for Mexico, rotary planing machines for export to London and Cuba, while radius planer attachments and special tools of other descriptions have been furnished both railroads and industrial plants in New England, the South, and to a number of both the Middle and far Western States.

New England Machinery Market.

WORCESTER, MASS., January 15, 1907.

The dealers have received notices from lathe builders that an advance of 5 per cent. on engine lathes will be made. Like other recent advances in machine tool prices the action of the manufacturers is not a concerted one, being rather another case of follow the leader, coupled with the fact that the conditions which make the increase desirable are identical with all of them. The reasons given are the constantly increasing cost of labor and materials, but there is more to it than that. As *The Iron Age* has stated, the manufacturers in advancing prices are making provision for the future. Machines which will be sold under the new prices will not be delivered for months to come. Neither will work upon them begin for a long time. Consequently the manufacturer, in order to protect himself against a possible greater cost of production, must make provision for the contingency at this time. It is generally regarded as more than a possibility that the cost of building a lathe or other machine tool will be greater six months from now than it is to-day, and the newly announced increase of 5 per cent. will take care of this factor of the future. It is not yet known whether the lathe advance will be universal, but already most of the larger concerns have given notice of the change, and it is presumed that others will follow, as they have in previous changes of prices.

Unless the consequence of the action of the lathe builders is very different from what it has been when other advances have been made by them, their present action will be followed by a rather general advance all along the line of machine tools of standard types. Such a change has been anticipated in the trade for some weeks and its realization occasions little surprise.

The foreign demand for American machinery for the manufacture of watches has increased steadily of recent years, the demand being particularly marked from Switzerland, as one might expect, and from Japan. The latter country is rapidly developing the industry, so the builders of watch tools state, and the field for this special class of machinery is consequently increasing. But the greatest demand comes from Switzerland. One watch tool concern has been unable to introduce a line of bench lathes, now several years old, in this country because its Swiss agents have taken the entire output of the works, and it is not a small one. There are foreign built machines for watch making, but they are much cheaper than the American machines. But they are correspondingly inferior. They are sold freely, however, for use in the small watch factories of Switzerland, many of which are in the homes of their owners, who cannot afford the more expensive machine, in spite of the fact that it does very much more accurate and rapid work. There would seem to be a market for an American machine of cheaper workmanship than that now shipped abroad. But, of course, the chief demand to which the American manufacturers will cater is that for the tools of the highest class, with their conveniences and appurtenances, which have made them the very superior machines that they now are.

The textile and paper mills will constitute a material factor in the trade this season. A number of large paper mills are projected, and the nature of the business is such that the repair shop is an important adjunct of manufacturing, it being frequently necessary to replace and repair parts. Their usual equipment consists of lathes for turning rolls, a small planer, drills, shaper, arbor press, and occasionally a boring mill. Other tools may be added, but these are the more indispensable parts of the equipment. The textile industry of New England is in so prosperous a condition that the aggregate new building will be very large, according to announcements constantly being made, which include some entirely new plants. These latter require repair shop tools, though not to the same amount as the paper mills. Where additions to textile mills are built existing repair shops are usually sufficient, though occasionally it becomes necessary to replace a machine or to increase the equipment.

The auction sale of the equipment of the W. S. Burn Mfg. Company, New Haven, Conn., manufacturer of metal specialties, held January 10, afforded another striking commentary upon the condition of the machine tool market. Machinery brought prices averaging very high indeed. The instance is in a sense even more suggestive of the tremendous demand for machinery that was that of the auction of the Shaw Machine Company's tools at Lowell last summer, for in the latter instance the Shaw tools were nearly new, some of them never having been used, while those at the Burn plant had been in use since 1902 for the most part, and some of them were old when originally installed at the works. Yet prices ranged fully as high as they did at the Shaw sale, and in some cases considerably higher. The Pratt & Whitney tools were conspicuous in the list, and brought prices as high, and in certain cases even higher, than those at which new machines could be ordered to-day, and as the new machines contain improvements the prices paid become even more striking. Small tools, electric equipment, &c., brought very good prices indeed. An exact comparison between present prices and those at which the machines sold cannot be advantageously made, because of the difference between them and existing types of the same make, and because included with them were groups of fixtures, &c., which do not compare with the appurtenances of new machines.

The attendance was large, fully 200 manufacturers and dealers being present, and the bidding was spirited. Dealers bought practically nothing, for prices ranged too high for them. They did some bidding, but were outclassed by users of machinery, to whom the opportunity to get tools for immediate delivery was one not to be neglected, even if they had to pay high prices. Following are the figures at which some of the machinery went:

Pratt & Whitney 12-in. tool makers' lathe	$515.00
Pratt & Whitney No. 1 hand screw machine	245.00
Two Pratt & Whitney No. 2 hand screw machines, each	300.00
Pratt & Whitney No. 3 screw machine	462.50
Pratt & Whitney automatic screw machine, up to ⅝ in.	487.50
Pratt & Whitney No. 1½ hand milling machine	175.00
Pratt & Whitney precision lathe, 7-in. swing, 32-in. bed	190.00
Brown & Sharpe universal milling machine	762.50
Brown & Sharpe No. 1 hand screw machine	320.00
Hendey 16-in. screw cutting engine lathe, old machine	325.00
Hendey 12-in. screw cutting engine lathe	285.00
Hendey 24-in. shaper, old style	330.00
New Haven Mfg. Company 24 x 24 planer, old machine	300.00
Bath universal grinder, old style	500.00
Gould & Eberhardt 12-in. high duty shaper, old machine	200.00
Blaisdell 17-in. screw cutting engine lathe	237.50
Two Blaisdell 17-in. screw cutting engine lathes, old style, each	215.00
Millers Falls power hack saw	220.00
Sloan & Chase 7-in. precision lathe	200.00
Petereit screw machine, special	240.00
Niles-Bement-Pond universal grinder	120.00
Two Niles-Bement-Pond speed lathes, $55,	67.00
Niles-Bement-Pond bench lathes, each	22.50
Sigourney 12-in. sensitive drill	77.50
Sigourney 12-in. two-spindle sensitive drill	110.00
Sigourney 12-in. three-spindle sensitive drill	145.00
Peck No. 4 400-lb. drop poppet drop hammer	200.00
Miner & Peck No. 3W 800-lb. drop hammer	265.00
Miner & Peck 150-lb. drop hammer	45.00
Peck No. 2 200-lb. drop hammer	72.50
Waterbury-Farrel heavy blanking press	152.50
Coulter & McKenzie blanking press	50.00
Merriam heavy blanking press	185.00
Three E. J. Manville Machine Company's No. 5 blanking presses, $250, $269	275.00
Blake & Johnson blanking press, 1½-in. stroke	77.50
Stiles & Parker 400-lb. key anvil drop hammer	125.00
Stiles & Parker No. 2 power press	45.00
Merriam trimming press	97.50
Two Herrick & Cowell grading rolls, each	280.00
Merriam tilt-over press	52.00
Three Adt large size foot presses, each	20.00
Ohl medium size blanking	62.50
Reed screw cutting foot and power 10-in. engine lathe	77.50
Boynton & Plummer shaper	60.00
Norton & Jones 12-in. sensitive drill	40.00

Nobody is able to ascertain with any definiteness how far the Boston & Maine engineers have progressed with their plans for the new repair shops which it is proposed to build at Somerville, a suburb of Boston. The Boston & Maine system is in need of very much greater repair shop facilities, especially at the Boston end of the system. The increase in rolling stock alone is already sufficient to keep much larger repair shops than anything now owned by the road in full blast the year round, and the need will be even more imperative when rolling stock now ordered or planned to be ordered is delivered for use. The company has made provision for the building of new shops by the issuing of securities, so the financial end has been taken care of. Report has it that there is some difference of opinion in the management as to how far the scope of the shops shall extend; perhaps, though this is conjectural, as to whether or not the new plant shall consist of both car and locomotive repair shops, or shall begin with car shops and later be extended to include both classes of the work. As stated, much of the discussion in the trade is based on no very sound knowledge, though chance remarks by those who do know have furnished the clews. It is presumed that all differences of opinion will have been settled by spring that work may begin immediately. As the lowest estimate of the money to

be expended is $1,000,000—the figure has been furnished by those in authority and includes only the cost of car repair shops—it is certain that the list of equipment will be an extensive one.

The Becker-Brainard Milling Machine Company, Hyde Park, Mass., will soon be occupying the new addition to its foundry, which will afford considerably greater room for both foundry and core room purposes. The addition is 30 x 90 ft. and two stories.

The Prentice Bros. Company, Worcester, Mass., has extended its manufacturing capacity until it is now sending out an average of 225 machines a month, consisting of radial drills, upright drills and engine lathes. This reckons in each multi-spindle drill as a single machine, and includes from 16 to 18 radials. Most of the machines of all types built by the company are of larger sizes. It demonstrates what the concentration of the work of 330 men can accomplish in the way of production under modern methods of manufacturing.

The A. C. Spalding & Bros. Mfg. Company, Chicopee, Mass., which recently purchased the Ames' foundries of that place, states that no decision has been reached as to whether the lathe and other tools manufactured by the Ames' foundries will be continued as a part of the Spalding business, the intentions being to operate the foundries in the manufacture of regular castings and bronze work. The lathe and tool work, such as has been done at these foundries, will be taken up later, if inquiries demand and encourage their doing so.

R. M. Clough, Tolland, Conn., manufacturer of machine tools and cutters, is planning to equip his shop with motors for operating his small machines, replacing belt drive. He has recently put electric lighting in his shops.

The Millett Core Oven Company, Brightwood, Mass., states that in one day's mail recently it received orders for Millett patent core ovens from London, Paris, Buenos Ayres, Argentine Republic; San Francisco, and Portland, Ore.

The Jones & Lamson Machine Company, Springfield, Vt., manufacturer of flat turret lathes and equipments, states that it will probably erect another shop building in the spring, but plans for the structure are not yet matured.

In connection with winding up the corporate existence of the Wheeler & Wilson Mfg. Company, Bridgeport, Conn., in merging the company into the Singer Mfg. Company, the important announcement is made that the initial steps have been taken toward doubling the capacity of the great plant, which should mean a great increase of its machine equipment. A tunnel is being constructed under adjacent streets, and this, in connection with the building of a large power plant, will form the beginning of the plan. A part of the work done by the Sewing Machine Cabinet Company is to be given up, in order to release the space for the manufacture of the sewing machines proper. All cabinet work will be done at the works of the Singer Company, South Bend, Ind., but the box shop will continue at Bridgeport. The name Wheeler & Wilson will disappear after a meeting of the stockholders on January 24, and the Bridgeport plant will be known as a branch of the Singer Company.

The Massachusetts Machine Shop, Incorporated, Worcester, Mass., has been organized to do a general cylindrical grinding business, and has taken a lease of the first floor of the industrial building at 100 Beacon street, formerly occupied by J. S. Wheeler, manufacturer of metal planers. The company has purchased from the Norton Grinding Company a complete equipment of grinding machines, in sizes 14 x 72 in. and 10 x 72 in., thus enabling the grinding of automobile crankshafts up to six throws. A general grinding and finishing business will be conducted, though a specialty will be made of automobile work. The company has been incorporated in Massachusetts with capital stock of $25,000. Henry W. Knights, Boston, is the president; Charles A. Whiteknact, vice-president and manager, and Arthur A. Knights, Boston, treasurer, the three constituting the Board of Directors. Mr. Whiteknact, who will be the active head of the business, has had a wide experience with machinery, having been connected with large machine shops of New England for the past 15 years, holding executive positions in the shop end of the work. The Beacon street location gives the company 7000 sq. ft. of floor space.

The syndicate which held an option on the shop and equipment of the James Brown Machine Company, Pawtucket, R. I., has abandoned its plans of utilizing the works for the manufacture of textile machinery, and consequently the entire property, including the machine tools, will be sold at auction some time in January, the exact date not having been fixed. J. E. Conant & Co., Lowell, Mass., will be the auctioneers.

C. H. Dexter & Sons, paper manufacturers, Windsor Locks, Conn., are to erect a new machine shop, 50 x 75 ft. and three stories.

Albert B. Curtis, Worcester, Mass., manufacturer of oil separators, is removing his business from Loudon street to 25 Union street, where he will have much larger quarters, which have been made necessary by the rapid increase of his business. He proposes to put on the market in the near future an oil separator of larger capacity than that now manufactured.

W. O. Bement and his son, Frank, recently with the Wire Goods Company, Worcester, Mass., are to establish a business for the development and manufacture of special machinery at Shrewsbury, Mass., a suburb of Worcester. W. O. Bement has been superintendent of the Wire Goods Company for many years, during which time he has developed many special machines, this work of late years having been done in conjunction with his son.

The new building to be erected by Harvey Hubbell, Incorporated, Bridgeport, Conn., manufacturer of machine tools and electrical specialties, will be 52 x 114 ft., four stories and basement.

The Lumsden & Van Stone Company, 69 High street, Boston, engineer and manufacturer of power plant equipment, is planning to erect new works at South Boston, which will be on rather a large scale. The company states, however, that it is not certain whether work will begin the coming spring, but when the decision to build is reached a considerable number of new machine tools and other equipment will be required.

The Boston office of the Prentiss Tool & Supply Company has purchased the machine tools of the National Gas Engine Company, Providence, R. I.

Government Purchases.

WASHINGTON, D. C., January 15, 1907.

Sealed proposals will be received until February 1 at the Frankford Arsenal, Philadelphia, Pa., for one 125-kw. generator, direct connected to engine or turbine, alternating current motors: one steam driven air compressor, three 200-hp. boilers, three superheaters, two duplex boiler feed pumps, one duplex hot water circulating pump, &c.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until February 9 for one motor generator set for the League Island Navy Yard.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until January 29 for motor, gear cutters and other supplies for the Eastern navy yards.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until February 5 for pumps, hydraulic jacks, pipe cutter and other supplies for the Eastern navy yards.

Of the bids opened January 13 for the completion of the Panama Canal the lowest was that of William J. Oliver, Knoxville, Tenn., and Anthony J. Bangs, New York, in partnership, who propose to do the work for 6.75 per cent. of the estimated cost. Other bids were George Peirce & Co., New York, 7.19 per cent.; the MacArthur-Gillespie Company, New York, 12.5 per cent., and the North American Dredging Company, San Francisco, Cal., 28 per cent. The contractor who is awarded the work will only have to furnish the hand tools, as the Government will furnish all locomotives, cars, steam shovels and other heavy machinery.

The following bids were opened January 2 for supplies for the navy yards:

Bidder 6, American Ship Windlass Company, Providence, R. I.; 7, Blackall & Baldwin Company, New York; 8, Baily-Libby Company, Charleston, S. C.; 12, Burnham, Williams & Co., Philadelphia, Pa.; 19, F. S. Banks & Co., New York; 27, Crane Company, New Orleans, La.; 31, Cuyler & Mohler, Baltimore, Md.; 34, Drew Machinery Agency, Manchester, N. H.; 36, D'Oiler Engineering Company, Philadelphia, Pa.; 41, Walter A. Foster Company, New York; 42, Fox Machine Company, Grand Rapids, Mich.; 45, Fairbanks Company, Baltimore, Md.; 53, Garvin Machine Company, New York; 58, Gardner-Governor Company, Quincy, Ill.; 66, Handlan-Buck Mfg. Company, St. Louis, Mo.; 67, Hamilton Machine Tool Company, Hamilton, Ohio; 82, Lima Locomotive & Machine Company, Lima, Ohio; 97, Manning, Maxwell & Moore, New York; 98, New Jersey Asbestos Company, New York; 99, Niles-Bement-Pond Company, New York; 103, National Electrical Supply Company, Washington, D. C.; 104, North Penn Iron Company, Philadelphia, Pa.; 106, J. Edward Ogden Company, New York; 107, Oliver Machinery Company, Grand Rapids, Mich.; 112, Prentiss Tool & Supply Company, New York; 113, H. K. Porter Company, Pittsburgh, Pa.; 123, Smith-Courtney Company, Richmond, Va.; 131, Wm. Sellers & Co., Philadelphia, Pa.; 141, Vulcan Iron Works, Wilkes-Barre, Pa.; 143, Vermilye & Power, New York; 149, Williamson Bros. Company, Philadelphia, Pa.; 151, Warren Steam Pump Company, New York; 153, C. H. Wheeler Mfg. Company, Philadelphia, Pa.; 155, H. K. Worthington, New York; 156, Westinghouse Electric & Mfg. Company, Baltimore, Md.; 157, York Mfg. Company, Philadelphia, Pa.; 158, Yale & Towne Mfg. Company, New York.

Schedule No. 302.

Class 11. One pipe threading machine—Bidder 8, $557.85; 27, $615.41; 31, $645; 34, $413.50; 41, $790; 45, $275; 66, $820; 97, $874; 99, $748; 112, $670; 123, $679; 143, $229.

Class 12. One single automatic bolt cutter—Bidder 34, $284.50 and $305.25; 41, $380; 45, $252; 66, $280; 97, $268; 112, $259; 123, $292.95.

Class 13. One screw cutting engine lathe—Bidder 53,

$1025 and $985; 67, $1090; 97, $1110; 98, $1048 and $977.

Class 14. One upright drill press—Bidder 45, $249.25; 53, $285; 67, $281; 97, $250.

Class 15. One improved planer chuck, one emery tool grinder, one power saw and one drill grinder—Bidder 45, $215; 112, $183; 123, $213.70.

Class 16. One saddle tank locomotive for shifting service—Bidder 12, $5200; 66, $4500; 82, $6075 and $6300; 113, $5585, $5300, $5550 and $5475; 141, $4800 and $4950.

Schedule No. 303.

Class 21. Three duplex salt water circulating pumps—Bidder 21, $1386, $1572 and $1539; 19, $1467; 58, $1425; 103, $1497; 151, $1350; 153, $1590.

Class 22. One pattern makers' wood lathe—Bidder 42, $888.50 and $962.50; 66, $595; 107, $1000.

Schedule No. 304.

Class 31. Two electric hoists—Bidder 158, $816.

Class 32. One electric hoist—Bidder 158, $400.

Class 33. One refrigerating plant—Bidder 157, $4350.

Schedule No. 305.

Class 41. Two compound geared double drum reversible steam winches—Bidder 149, $2150.

Class 42. One steam winch—Bidder 6, $1200.

Class 43. One steam drop hammer—Bidder 97, $1700; 98, $1850.

Class 44. Three pumps, complete with engine and motor—Bidder 7, $10,461; 36, $7225; 104, $6480; 106, $6039.60; 155, $8940; 156, $11,339.

Schedule No. 315.

Class 79. One twist drill grinding machine—Bidder 131, $155 and $195.

Bids were opened on December 22 for a 20-ton steel derrick for the naval station at Olongapo, P. I., as follows:

The Pittsburgh Industrial Iron Works, Pittsburgh, Pa., item 1, $3016; 2, $3592.

The G. & W. Mfg. Company, New York, item 3, $4132, New York, and $4532, San Francisco.

Wm. L. Miller, Boston, Mass., item 1, $8900; 3, $7925, New York.

The Hayward Company, New York, item 1, $6000; 2, $6471, San Francisco.

The Snare & Triest Company, New York, item 1, $5700.

The Dobbie Foundry & Machine Company, Niagara Falls, N. Y., item 1, $4883, New York; 2, $5218, San Francisco.

The Interstate Engineering Company, Bedford, Ohio, item 1, $4575; 2, $4975; 3, $4500, New York, and $4900, San Francisco.

The Cooper Iron Works, Newark, N. J., item 3, $2950, New York.

The North Penn Iron Company, Philadelphia, Pa., item 1, $4500; 2, $5250.

Under bids opened January 3, Circular No. 344, for supplies for the Isthmian Canal Commission, Manning, Maxwell & Moore, New York, has been awarded class 1, four Scotch marine boilers, $15,899.96.

The Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., has been awarded contract for the engines, generators, substation apparatus, &c., for the Capitol power house, bids for which were opened December 26. The company was awarded the contract under its bid A of $533,728.

Under bids opened December 17, Circular No. 342, for supplies for the Isthmian Canal Commission, Fox Bros. & Co., New York, have been awarded class 7, 12 duplex pumps, $2734.80.

The following awards have been made for supplies for the navy yards, bids for which were opened December 18:

The Stroudsburg Engine Company, Stroudsburg, Pa., class 2, two hoisting engines, $1475.

Manning, Maxwell & Moore, New York, class 11, one improved engine lathe, $935.

The Vandyck, Churchill Company, New York, class 12, one cold metal sawing machine, $524.

The Oliver Machinery Company, Grand Rapids, Mich., class 13, one double end lathe, $257.

The Handlan-Buck Mfg. Company, Philadelphia, Pa., class 1, one wood planing machine, $1900.

The Hendey Machine Company, Torrington, Conn., class 21, one lathe, $830; class 22, one toolroom lathe, $890.

The Atlantic Works, Philadelphia, Pa., class 32, one portable deck planer, $550.

James Clark, Jr., & Co., Somerville, Mass., class 43, two electrically driven water tool grinders, $423.

The Holtzer-Cabot Electric Company, Brooklyn, N. Y., class 191, four motors, $112.20.

The Independent Pneumatic Tool Company, Chicago, Ill., class 243, four pneumatic drills and eight pneumatic hammers, $536.60.

The following awards have been made for supplies for the Isthmian Canal Commission, Circular No. 341, bids for which were opened December 6:

Chicago Pneumatic Tool Company, New York, class 1, rock drills, &c., $2810.

Ingersoll-Rand Company, New York, class 2, rock drills, &c., $2153.30; class 3, steam rock drills, &c., $7042.53.

Under bids opened December 11 for supplies for the navy yards the following awards have been made:

Harron, Rickard & McCone, San Francisco, Cal., class 11, one belt driven shaper, $552.38; class 15, one heavy pattern upright drill, $202.

Henshaw, Bulkley & Co., San Francisco, Cal., class 12, one belt driven pipe cutting and threading machine, $720; class 16, one 24-in. screw cutting engine lathe, $1250.

Manning, Maxwell & Moore, New York, class 278, three Greenard arbor presses, $101.30.

The George F. Blake Mfg. Company, New York, class 284, two boiler feed pmups, $82.

The Case Mfg. Company, Columbus, Ohio, class 1, one electric traveling hoist, $600.

The Independent Pneumatic Tool Company, Chicago, Ill., class 143, six pneumatic air drills, $318.50.

Cincinnati Industrial Notes.

CINCINNATI, OHIO, January 14, 1907.

The sixth annual meeting of the Cincinnati Industrial Bureau will be held at the Business Men's Club, January 21. M. E. Ingalls, W. H. Manss and Prof. John Uri Lloyd will address the meeting on subjects bearing on the work of the bureau. At this session 15 directors will be elected to serve for the ensuing year. The bureau is working on several large propositions, one of which is the location of a steel mill that is already established and in operation, but is desirous of changing from its present base because of inadequate railroad facilities.

The Smith & Mills Company, Cincinnati, was incorporated January 5 with a capital of $160,000 by Albert S. Smith, James Mills, James E. Mills, Ernest Mills and William Schuchardt. The business was formerly conducted as a partnership, under the name of Smith & Mills, builders of machine tools, and will be carried on without other change than the incorporation.

The Stewart Company, manufacturer of iron and structural steel, now located at Third and Culvert streets, Cincinnati, has disposed of this property and will seek new and more commodious quarters. It is understood that possession will not be given until June, by which time everything will be definitely arranged for moving the plant. The present facilities have been completely outgrown and the company is considering several locations in the neghborhood of Norwood, where ample space may be secured. Plans are now being drawn for shops with double the company's capacity. These will be devoted to the manufacture of structural and ornamental iron work.

The Concrete Steel Construction Company, Cincinnati, has been awarded the re-inforced concrete and steel work on the new State jail grand stand at Columbus, Ohio, at its bid of $24,962.

Mechanical Draft.—In addition to the economical advantages of mechanical draft there are others which relate primarily to the convenience of installation and operation. Prominent among these is the feature of adaptability. The fan, which is usually of steel plate, may be constructed in any shape to meet specific requirements, may be located as desired, with regard to the position of the boilers and without expensive foundations, may be used for either forced or induced draft, and, because of its portability, may be relocated, or exchanged for another of different capacity. In its operation the fan is perfectly flexible, may be run at high or low speed, independently of the chimney temperature, and is always susceptible to instantaneous change in response to sudden demands. A mere change in engine cut-off produces an effect secured with a chimney only by adding to its hight.

The annual dinner of the Engineers' Society of Western Pennsylvania was held in the Hotel Schenley, Pittsburgh, on the evening of January 12, with more than 300 present. A reception preceded the dinner. Isaac W. Frank, president of the United Engineering & Foundry Company, was toastmaster, and addresses were made by Mayor George W. Guthrie, Judge Noah Schaffer, Col. H. P. Bope of the Carnegie Steel Company, and others. Morris Knowles was chairman of the Banquet Committee.

The Consolidated Connellsville Coke Company has been formed by the merging of the Southern Connellsville Coke Company, the Sterling Coal & Coke Company and the Masontown Coal & Coke Company. The new company is one of the largest in the Connellsville region and owns 2000 acres of coking coal, 500 acres of surface and 1000 ovens.

HARDWARE

IN view of the depth to which public feeling has been stirred by the numerous investigations and evidences of graft and of misuse of power in so many large corporations, it is well for us to endeavor to judge from our own experience and observation as to the extent to which the system of commercial piracy has been carried, and as to whether the Golden Rule is simply a fiction in business or a standard of conduct. The moral awakening which has been brought about by the frequent disclosures of organized greed has naturally created a feeling that the system of business pursued by some of the so-called "captains of industry" is that which universally prevails, even in small circles. It doesn't take much observation and reflection, however, to show that this is not the case, but that as a whole business conditions are sound and that there has been a distinct and far reaching evolution from the original idea of trade or of barter. A "community of interest" is not a mere idle dream, and present selling and buying is something different from the elementary plan of pitting the wits of one unscrupulous adversary against another. The general idea, of course, has always been that of getting an advantage and of maintaining it, but there has gradually come about a change in the point of view as to what really is best and what kind of advantage should be taken.

It is constantly true, and always will be until the millennium, that sharp practices and cunning and dishonest methods often reap rich material rewards, yet it is equally true that general business is not as a rule conducted along these lines, but upon a broader and more permanent foundation. Every man of sense knows that this is not a rose water world and that competition is warfare and even a severe battle, yet experience has taught that unrestricted competition doesn't pay; and as every manufacturer, jobber or retailer is in business primarily to make money his thoughts naturally incline as to what are the best methods of doing this. If there was only one trade to be made and there was no to-morrow or no moral question involved it would not be a difficult proposition, and the majority of people would determine it very quickly.

Those business concerns who have endured the longest, who have the highest reputation, and in whom there is the greatest confidence felt, are looking much more largely to the future, since the whole enduring basis of buying and selling is that of absolute mutual confidence. This doesn't mean that the seller shall not get the best he can nor that the buyer shall not drive a shrewd bargain; but it does mean that at least fair and square methods should be employed and that deception, lying and sharp practices are to be avoided if both parties are to continue in constant business relations. Taking advantage of a customer's ignorance or necessities pays only for the time, and generally brings its own reaction; and it is safe to state that among the great mass of merchants, whether they be manufacturers, jobbers or retailers, the question of confidence in the man with whom we are doing business is the principal thing and that relations finally either stand or fall upon that basis.

It is an old story that personal feelings and jealousies provoke bad business and unnecessary cutting of prices, while confidence, good will and a general understanding mean harmony, co-operation and maintenance of profits. So true is this, particularly in the manufacturing line, that there is scarcely an item of any importance among manufacturers on which there doesn't exist some agreement. These agreements are often more or less indefinite, but they undoubtedly serve their purpose. Now it must not be forgotten that these agreements, no matter how they may be drawn or how they may be surrounded and hedged about by penalties and the like, find their final resting place in mutual confidence. It is easy to evade them with impunity, and the only thing that really keeps them going is the right kind of feeling among the parties engaged. The story of the successful house is usually the story of the house that is noted for fair dealing and considerate treatment of its customers and most of all for an attempt in its dealings to approximate somewhere the principle of the Golden Rule.

Condition of Trade.

Some slackening in activity incident to the inventory season has doubtless been felt by the Hardware trade. This, however, is almost uniformly reported to be less marked than usually experienced at this time. Orders continue to be received in good volume from all quarters. Manufacturers seem to be making some progress in catching up with their orders, but another wonted period of relaxation is passing without affording the much needed opportunity to accumulate stocks. Deliveries on many lines are still slow. Productive activity is impeded by shortage of labor and by difficulty in securing raw material, which holds firmly at prices that undoubtedly represent increased costs to most manufacturers. Further noteworthy advances are occurring in Brass and Copper products, on which quotations can only be made from day to day. Revised schodules, representing a higher range of prices, continue to be received from various manufacturers. Under such conditions there is little encouragement for buyers to seek concessions, and most of them show a disposition to place orders wherever early deliveries can be promised, without regard to price. Stocks, however, in the hands of jobbers and retailers alike are said to be unusually large, and, as one of our correspondents pertinently remarks, spring business must indeed be in good order to move them. Building operations are furthered by the continued mildness of the winter, but the unseasonable weather naturally tends to decrease volume in certain lines. An exception to these conditions is observed in the Northwest. Some complaint regarding collections is heard in the West, but in the East they are noticeably improved.

Chicago.

The effect of annual stock taking operations in Hardware lines is observed in the somewhat lessened volume of orders now coming in; but as this work is now practically completed, renewal of buying for the replenishment of stocks will doubtles begin at once. Jobbers are taking advantage of the temporary lull to shape up stocks and prepare for the revival that must surely come with buying for spring requirements. Recent price advances have not only been well sustained, but new advances are being made in some lines, and more are anticipated in the near future. While the situation as to delay in factory shipments has noticeably improved in many directions, the necessity for prorating has by no means been wholly

relieved. The volume of trade is, on the whole, unusually large for this season of the year, and has been sustained by open weather conditions prevailing throughout the greater part of the Middle West. An advance of 10 per cent. is reported in Floor and Wall Registers, and prices on Hammers have been marked up 5 per cent. Nickel Plated Goods are in strong demand, with slight advances on various articles in the line. The recently predicted advance in Wire Cloth has been officially announced. The new price shows an advance of 5 cents per 100 sq. ft. over those last quoted, and makes Painted Screen Cloth $1.15 to jobbers and $1.30 to retailers, car lots, f.o.b. factory, with usual freight allowance to cover deliveries to Mississippi River points. Poultry Netting has likewise been advanced 2½ per cent., these prices becoming effective January 11. Heavy shipments are now being made on Wire Goods for the spring trade, and in consequence of the strong demand deliveries are being generally delayed about three weeks. Among manufacturers the leading interests are sold ahead on Poultry Netting for at least two months. A disturbing factor in the Wire Netting and woven trade has been eliminated by a general insistence on the part of manufacturers that specifications shall in all cases accompany orders, it being hoped that this requirement will obviate speculative tendencies in buying that have heretofore been productive of unfavorable results.

Cleveland.

THE W. BINGHAM COMPANY.—There is nothing particular to say in regard to the condition of trade in this district at the present time. Our customers have been very busy since the first of the year taking their annual inventory, and many salesmen have been off their routes for the last two weeks, taking a well earned rest and getting acquainted with their families, mending their fences, also visiting their home offices and warehouses, taking up new and old matters, having a good general talk so they will be cocked and primed for the spring campaign. Many of these salesmen are now starting out on their regular routes, and as all retail customers have had a good, steady business all through last fall, our salesmen will undoubtedly have a good trade from the start.

Revision in prices seems to be the order of the day, and our customers who have bought goods of us for immediate or future shipment will reap the benefit of their purchases. The many orders and inquiries we are now receiving from the trade by mail indicate business will start in brisk and early this year.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The year starts out with a widespread confidence in its future. There were a large number of orders booked the latter part of the year for January shipment. None of these have been canceled so far as we know, which is always a good sign.

The weather has been most unseasonable; for example, to-day it was 60 degrees in the early morning, and as a consequence we are having an unlimited amount of rain. This has flooded the Ohio River bottoms, including all of its tributaries. The country roads are well night impassable, though not quite at the stage they are in when the frost has been coming out of the ground. So far there has no frost gone into the ground. It has been years, however, since there has been such a good, generous soaking of the soil in this part of the country, so that while temporarily depressing, it is not without its good promise of future yield.

The high rate for money still continues, owing to the pressure in the North and East. It would look as though the rates were destined for some time to be lower in the centers where speculation is not so rife, and where money has been permitted to accumulate by those who actually won it out of the soil. A thousand dollars deposited in the Bank of Big Bull Crossing looks very much larger to the surrounding community than a similar amount at the corner of Broad and Wall, for the gentleman at the former who owns it has money to lend. The position of money lender, with returns coming in at stated periods in the

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shape of interest, is one very much envied by the country people, who work hard and late in all kinds of weather to accumulate their pile. A number of these small money lenders have been heard from in the nearby cities.

The railroads have come in for a large share of criticism for car shortage and general lack of facilities, but we imagine that the pressure put on them by shippers will be more effective toward bringing order out of confusion than any number of laws passed in the State legislatures. In fact, the best efforts of those charged with the handling and developing of property is largely spent in fending off severe and unjust legislation. Of course the greed to accumulate immense fortunes by the various "octopuses," as they are familiarly called in the public prints and by the caricaturists, is something to be kept within bounds, but that cannot be done completely or well as long as there is any suspicion of venality on the part of our legislators.

While writing this very article word has come in that one of the principal railroads running out of Louisville has shut down its receiving platform and has notified shippers of its inability to take ordinary freight for a day or two until the present congestion shall be relieved. We have either got to have less business or more double track railroads in this part of the country. As long as the railroad demand keeps up, we look for good business in commercial and manufacturing circles. They are the great consumers.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—In the early part of January we have had warm, wet and unseasonable weather, in the South rising rivers and floods. In many country districts the soft roads are almost impassable. This condition always has an unfavorable effect upon business. Nevertheless numbers and size of orders compare favorably with 1906. The jobbers and their salesmen have a big contract on their hands to beat the record of January, February and March last year.

The principal question in our minds is the condition of stocks in the hands of the retail trade. The results of inquiries from a considerable number of intelligent retail merchants in several neighboring States lead us to believe the stocks of retail dealers are a good deal heavier than they were at this time a year ago. We believe the retail trade is overbuying. Some sellers are overworking the bug-a-boo of advancing prices. A retailer with limited capital has no business to speculate; he will come out a good deal better at the end of the year if he buys goods just as he needs them. He makes a mistake to load up in the hopes of saving every advance.

The answers of our retail correspondents indicate their stocks upon the average are about 25 per cent. greater than at the same time a year ago. We also believe jobbers' stocks are heavy. Business will have to be good this spring to reduce the stocks of both jobbers and retailers.

Our investigations lead us to believe the cry of shortage of goods has been exaggerated. There is, of course, some shortage, but we believe the assortments in the trade, generally speaking, are complete, and that in some lines jobbers and retailers are overstocked.

Collections at present are not good; they are poorer than they have been for a long time past. The reasons for this slowness are primarily from overbuying on the part of retail dealers, also storms, floods, bad roads, slow movement of cotton and troubles in the tobacco districts.

Southern merchants report that warehouses are full of cotton because they cannot get cars to carry it away. From all directions come reports of congestion in traffic on the railroads. Terrible railroad accidents have been of almost weekly occurrence. The loss of life has been something frightful. Business men are asking what is the matter with the railroads. Judged by results, there seems to be something lacking in management.

At the end of the year the writer of this article wrote a number of letters to personal friends among the trade thanking them for their favors last year and asking how they were doing. We have received many replies to that letter. Many of these merchants say they are glad there has been such general prosperity, but that they themselves have not made any more money than in former years. Some state they have not done as well.

We suggest to every retail dealer he compare the amount of goods he has on hand January 1, 1907, with last year; that he also compare the amount of money he has out in the country and the amount he owes. If we are not mistaken, a careful comparison of this nature will lead him to decide to work off some of his overstock and to devote his attention urgently to collections and reducing his indebtedness.

The feeling that the value of your stock on hand has appreciated by reason of advances may be a very satisfactory one, but after all a profit is never made until the goods have been sold and paid for.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The Hardware business for the year 1907 has started off very auspiciously. Nearly all of the salesmen are now on the road and spring orders are beginning to come in nicely. The movement of Farming and Garden Tools, Saddlery and Harness Goods, Nails, Wire Fencing, and other seasonable lines is getting heavy, and we anticipate an enormous spring trade. Collections are also very good.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The past two weeks have been unlike any others in the year, because of the special work involved in the annual invoice, a task unequaled in any previous year, although put through in less time than usual, due to the use of improved methods, and the practical suspension of filling orders for a few days between Christmas and New Year's. At this time of year also a larger number of our selling force are with us than at any other season, so that while there have been fewer orders to fill the home guard has been more busy.

The local situation has disclosed a similarity between two widely separate forces—price and temperature. Buyers' desks have been literally covered with announcements from various factories, revising prices on many lines which had already advanced several times during the past year, involving on the part of the price book department an amount of work never before equaled in the same length of time. In fact, it amounts to an almost entire revision of our selling prices.

The weather man, not to be outdone by the record breaking figures of trade Barometers, has been shoving up the mercury in our Thermometers, until one day it reached the 67 mark, the highest January temperature since our Weather Bureau was established. This has especially facilitated the many building operations in and around our city, and thus far this winter all kinds of outdoor work have gone on with but a day or two's interruption. Perhaps the most important constructive work is that of the underground electric railway, of which our Traction Company plan to build some 25 miles within the next few years. Market street, from City Hall to the Delaware River, is more or less torn up, and merchants are greatly inconvenienced by the gigantic task of removing from 25 to 30 ft. of earth, not only between the curb lines, but in many places running inside the building lines, where it has been necessary to build up new foundation walls to separate the abutting properties. The four tracks will allow for both express and local trains, and within a year it is expected that Market street, from river to river—about 3 miles in length—will have a smoothly working subway road, the equal of any in this country or abroad.

Trade continues in undiminished volume, with no indication of any let up. Collections are fair.

Portland, Oregon

FAILING, HAINES & MCCALMAN.—With the opening of the new year everything points to even greater, if possible, prosperity in this section of the country than last year. The new railroads building, the great number of new settlers coming into the country, the constant increase of demand for lumber, the putting of new country under cultivation, and the thousand and one other things, all point to an even greater demand for Hardware

and kindred lines than ever before. The only cloud on this clear horizon is the inability of the manufacturers to furnish us goods as fast as we can use them and the inability of the railroads to transport them as fast as the manufacturers can get them out. This latter, we hope, will be corrected soon, but hoping and expecting are two different things.

The unprecedented prosperity of this section of the country has apparently caught the railroads very much unawares, for instead of spending their surplus in developing the lines they already have in this and tributary territory and in putting in sufficient equipment on their existing lines, they have spent a large portion of it in costly fights with each other for terminal facilities. We hope, however, that in a short time the railroads will be able to do better by us than they have heretofore. We know that the railroad officials in this part of the country are doing the best that they can, but really it seems at times as though we were getting our goods by the ox team of our grandfathers. With this exception, as we have said, everything looks prosperous. Money is plentiful, collections are wonderfully good, and everybody is looking forward to a prosperous year.

New Orleans.

WOODWARD, WIGHT & Co.—The year that has just closed has, we feel, been a most successful one for all the Hardware people in this section, and we are looking back on it with pleasure and satisfaction, and hope that after the annual inventory is figured up and reduced to dollars and cents, we will be as pleased as we are now, when we are sure it is all right, and that 1906 has been the most prosperous year we have had down here in a long time.

There is only one thing that is worrying the Hardware merchants in this section now. That is the way our customers refuse to buy Stoves. It is possible that the fact that in this section we have had a temperature of approximately 75 or 80 degrees straight along since summer ceased has had something to do with it, and that when we get some cold weather the demand will spring up in fine style. It is a peculiar thing that we all have had a heavy run on Light Sheet Iron Trash Burners, but the Heavy Heating Stoves have not sold anything like the way they have in years past.

The opposite effect, however, is developed in Galvanized Iron Roofing, other Roofing, Pipe, Fittings, Nails, and practically everything that is used in building; due to the open weather, the demand for this class of material has been very large.

The car shortage is still being complained of, and seems to be getting worse, if anything, and it is particularly hard on the lumber people who have their camps full of lumber sawed to order, and they are absolutely unable to move it. This makes collections in that direction slow, and is about the only unsatisfactory feature at this time.

The condition of the individual customer, where he is not dependent on the car supply or sugar, is all that could be desired, and payments from the smaller trade are on a very satisfactory basis.

The season for Barb Wire is opening up well, and we look for a large demand throughout the newly settled portions in the vicinity of New Orleans on this article.

Reports from the sugar territory indicate a good starting on the stubble cane. Sugar in Louisiana is raised in this way: One year it is planted, and the next year the cut over canes become stubble and raise one crop, and the third year it has to be planted again. So it is barely possible that if we keep on for 1907 like we have in the past two or three weeks, we may make enough sugar in that year to make up for the shortage and low prices our planters suffered in 1906.

The greatest difficulty that any of us has down here, as in this section almost all Hardware merchants handle Railroad Supplies, is to get a Railroad Spike of any shape, size or nature, and prices are being paid for them for spot delivery that are simply astonishing, when we consider that for years past we have all rolled along buying our Railroad Spikes with a variation of hardly 15 or 20 cents per 100 lb., between the highest and the lowest figures.

Taken as a whole, our section is thoroughly prosperous and happy, and while we are, all of us, willing to have more currency for our own particular uses, yet the South is really getting along very nicely and evenly as it is.

NOTES ON PRICES.

Wire Nails.—Specifications on contract orders now being received by the mills are very heavy, and shipments are 30 days or more behind, due to inability to make Nails fast enough to supply the demand and to car shortage. The present volume of new business is not as heavy as for the same period in December. Prices are firm. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$2.00
Carload lots, to retail merchants	2.05

New York.—The local demand is only fair, as is to be expected at this season. Mills are considerably behind in their shipments, but this is not burdensome to jobbers, owing to limited business. The market is fairly firm at regular quotations. New York quotations are: To retailers, carloads, on dock, $2.19; less than carloads, on dock, $2.33; small lots, at store, $2.30.

Chicago.—The volume of new contract tonnage now being booked is light, but the rush of specifications on previous orders now coming in is productive of heavy shipments, which are attended with more or less delay both on account of taxed mill capacity and difficulty of procuring cars. The car shortage, which was somewhat less acute in December, is again becoming more accentuated. Prices remain unchanged and are as follows: $2.15 in car lots to jobbers, and $2.20 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—The volume of new business so far this month is not as heavy as in the corresponding period in December, but specifications on contracts are being received in heavy volume and the mills are still four to five weeks or longer behind in deliveries. This is due to the heavy specifications, but mostly to the car shortage, the mills being unable to get cars as fast as needed to ship their product. The market is firm and we are advised that official prices are being rigidly held. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$2.00
Carload lots, to retail merchants	2.05

Cut Nails.—The demand, including new business and specifications, is of such volume that the mills have not yet caught up with their orders.. The stocks of manufacturers and jobbers are short on certain sizes. It is not anticipated that any change will be made in prices by the Cut Nail Association, which meets this week. Quotations are as follows, f.o.b. Pittsburgh: Carload lots, to jobbers, $2.05; less than carloads, to jobbers, $2.10; less than carloads, to retailers, $2.20. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 10 cents advance on Steel Cut Nails.

New York.—The demand at this point is restricted to actual requirements, which are limited at this season, and the local market is fairly firm. Jobbers' regular quotations are on the basis of $2.30 for small lots at store.

Chicago.—Orders and inquiries are coming in freely for both Iron and Steel Nails. Building operations, which as yet have not been seriously interfered with by closing weather, are responsible for a degree of activity not usual at this season. Some heavy orders are being placed for large sizes of Cut Nails by railroads. Quotations are unchanged and are as follows: Iron Cut Nails, car lots, to jobbers, $2.30; to retailers, $2.35; Steel, to jobbers, in car lots, $2.20; to retailers, $2.25.

Pittsburgh.—The Cut Nail Association is scheduled to meet in Philadelphia January 16, but it is not ex-

pected that any advance in prices will be made. The mills are still behind in deliveries on orders for Cut Nails, and specifications on contracts are coming in freely. Stocks held by manufacturers and by jobbers are lighter than usual, and are badly broken on certain sizes. Quotations are as follows, f.o.b. Pittsburgh: Carload lots, to jobbers, $2.05; less than carloads, to jobbers, $2.10; less than carloads, to retailers, $2.20. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 10 cents advance on Steel Cut Nails.

Barb Wire.—The desire on the part of jobbers to accumulate spring stocks, to meet the demands of the retail trade, is resulting in a heavy volume of specifications being received by the mills, with urgent requests for prompt shipment. While new business is comparatively light, the mills have not succeeded in catching up with deliveries. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.15	$2.45
Retailers, carload lots	2.20	2.50
Retailers, less than carload lots	2.30	2.60

Chicago.—In anticipation of the requirements of spring trade, jobbers are clamoring for shipment in order that their stocks may be seasonably replenished. Car shortage is contributing in this, as in other lines, to retard deliveries, which, taken together with the volume of unfilled orders at mill, results in delays of from two to three weeks. We quote as follows: To jobbers, Chicago, car lots, Painted, $2.30; Galvanized, $2.60; to retailers, car lots, Painted, $2.35; Galvanized, $2.65; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, Bright, in car lots, $2.25; Galvanized, $2.55; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Jobbers are anxious to accumulate as large stocks as possible for spring trade and are furnishing liberal specifications to the mills on contracts. New business being placed is light, but with a continued shortage of cars the mills are not able to catch up on deliveries to any extent. Quotations as are follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.15	$2.45
Retailers, carload lots	2.20	2.50
Retailers, less than carload lots	2.30	2.60

Smooth Fence Wire.—Mills are largely engaged in filling specifications on contracts. Owing to the large volume of this business and to car shortage, mills are still behind on shipments. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.85
Retailers, carloads	1.90

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base.	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	40	.45	.55	.65	1.05	1.15

Chicago.—There is apparently no abatement in the demand, and specifications are being freely furnished with insistent requirements for prompt shipment. Quotations are unchanged as follows: In car lots, to jobbers, $2, f.o.b. Chicago, and to retailers, $2.05.

Pittsburgh.—Large consumers placed heavy contracts some time ago before the advance in prices on which they are now specifying very liberally, the mills being behind in shipments owing to the continued shortage in cars. New orders being placed this month are light, the mills running nearly altogether on specifications on old contracts. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.85
Retailers, carloads	1.90

The foregoing prices are for base numbers, 6 to 9.

Bright Wire Goods.—Owing to the continued advances in Brass Wire, manufacturers of Bright Wire Goods have made a noteworthy change in their discounts, differentiating between lines made of Brass Wire and those made of Steel which in the past have been subject to the same quotation. Bright Wire Goods made of Brass Wire are now quoted to the retail trade at 85 and 25 per cent. discount, while the discount on regular Bright Wire Goods remains unchanged at 90 and 10 per cent. A corresponding advance has been made in Brass Cup and Shoulder Hooks, which are now quoted to the retail trade at 80 and 15 per cent. discount.

Bolts and Nuts.—No changes in discounts were made at the opening sessions of the Bolt, Nut and Rivet manufacturers who are holding their monthly meeting in this city during the present week.

Wire Cloth and Poultry Netting.—As suggested in our last issue manufacturers of Wire Cloth and Poultry Netting have announced higher prices to go into effect at once. Orders may be placed for delivery up to April 1. The advances are as follows: On Regular Painted Screen Cloth, 5 cents per 100 sq. ft.; on Hardware Grade Cloth, 25 cents per 100 sq. ft., and on Poultry Netting, 2½ per cent.

Turnbuckles.—Prominent manufacturers of Turnbuckles have general advances in their prices coincident with the first of the year.

Asbestos.—Asbestos Rope and Wick Packing has been advanced 3 cents per pound to 20 cents in lots of 500 lb. and over and to 25 cents per pound for less than 500 lb. The market for other Asbestos materials ranges with some manufacturers at 3 to 3¼ cents per pound in car loads and a ½ cent advance for less than car loads on Asbestos Paper, Mill Board taking different prices up to 5 and 6 cents per pound, according to the desire for orders. Reference is made to the continued advance in the raw material at the Canadian mines as indicative of further increases.

Rope.—Thus far in the present month manufacturers report business running behind the demand during December, which is not an usual condition at this season. The market is referred to as being firm at the lower range of prices as given in the following quotations: Pure Manila, 12½ to 13 cents; B quality, 11½ to 12 cents; Pure Sisal, 9¼ cents; No. 2 quality, 7¾ cents to 8 cents; No. 1 Jute, ¼ in. and up, 9 cents; No. 2 Jute, 8½ cents. There is a report to the effect that a round lot of large size Sisal Rope, colored to represent Pure Manila Rope, was recently ordered by a jobbing concern who, it is anticipated, will presumably quote it as Pure Manila Rope, and sell it as such. Among the better class of trade such transactions are regarded with disfavor, as the larger sizes of Pure Manila Rope are commonly used for hoisting purposes, and upon the quality of the Rope life and limb often depends.

Window Glass.—Manufacturers report that conditions are generally favorable for a continuance of the present good demand for Window Glass. It is understood that considerable trouble is being experienced in handling some of the union workmen in factories and it is hinted that if the disturbing element cannot be brought into line there is a possibility that before long a large number of the glass workers will be without work. An estimate has been given out that the supply of Glass now in manufacturers' hands is about 1,000,000 boxes less than at the corresponding time last year, and that jobbers' stocks are not larger than at this time in 1906. At the last meeting of the Eastern jobbers it was decided that their price on carload lots of Glass should be the same as that recently made by the National Brokerage Company, which is as follows: Single strength, 90 per cent; double strength, 90 and 5 per cent. discount from manufacturers' list. Local demand is light and jobbers' quotations, from jobbers' list October 1, 1903, are as follows: Greater New York, 90 and 10 per cent. discount for all sizes, single and double strength; outside of Greater New York, 90 and 5 for single and 90 and 10 per cent. discount for double strength Glass.

Spirits Turpentine.—Business is light at this point, with an advance of ½ cent in prices during the week under review. New York quotations are as follows, according to quantity: Oil Barrels, 71½ to 72 cents; Machine Made Barrels, 72 to 72½ cents per gallon.

NEW ENGLAND IRON AND HARDWARE ASSOCIATION'S DINNER.

ONE of the most largely attended banquets in the history of the New England Iron and Hardware Association was given at Hotel Vendome, Boston, Tuesday evening, January 15. As usual the occasion brought together a large and representative assembly of men prominent in the iron and Hardware trade, not only from Boston and immediate vicinity, but from all parts of New England and elsewhere in the country. The annual dinners of this association are important social events and serious discussions of trade problems are not in order. The speakers, therefore, were selected more for their entertaining qualities as such than for their ability to throw light on the business of the members. The arrangements for the dinner and reception which preceded it were in charge of the following committee: John T. Boyd, chairman; A. J. Chase, R. M. Boutwell, A. B. Marble, George P. Bullard.

President Roswell M. Boutwell presided and at the close of the dinner made an address in which he referred to the high standard of membership in the association and

R. M. BOUTWELL.

asked for the active co-operation of all in the work upon which they were engaged.

The president then introduced Hon. Samuel L. Powers, ex-congressman from Massachusetts, who acted as toastmaster. Mr. Powers is well known to the trade and contributed much to the success of the evening by a short and witty address on taking charge and by appropriate introductions of the other speakers. The first toast, "The Commonwealth of Massachusetts," was drunk standing and responded to by Hon. J. N. Cole, Speaker of the Massachusetts House of Representatives. The next speaker was Hon. Henry D. Clayton of Alabama, who spoke at length and entertainingly, giving some facts and figures regarding Alabama's resources and manufactures. He was followed by Lucius Tuttle, president of the Boston & Maine Railroad, speaking on "Transportation." The last speaker was the Rev. Paul Revere Frothingham.

The pleasure of the evening was greatly enhanced by excellent music by an orchestra and singing by the guests during the dinner. The vocal exercises were led by John W. Crooks of Boston Bolt Company, from printed copies of popular songs put at each plate. It was not only the largest dinner, but one of the best of the long series of this association.

P. F. BURKE, South Boston, Mass., manufacturer of Steel Toe Calks, Horseshoers' Foot Vises, &c., whose calendar for 1907 was briefly noticed in a recent issue, advises us that he has been inundated with requests for copies. Some of these he has been able to comply with, but as his supply of calendars has been exhausted he regrets that the great majority have not received attention.

TRADE ITEMS.

FARWELL, OZMUN, KIRK & Co., St. Paul, Minn., tendered their annual dinner, the tenth, to their traveling salesmen and heads of departments on Thursday, December 27, at the Merchants' Hotel. The evening was voted by those present, about 125 in number, as being one of the most enjoyable of the series. A few remarks were made by President R. A. Kirk and several invited guests, following which the assembly was treated to a very delightful vaudeville entertainment. The programme of the dinner was issued in very attractive form, and the front cover bore an interesting snap shot taken last summer showing the company's new and imposing building and its environment. The company is just completing its first year in the new quarters, and find that the building and its appointments have fully realized the most sanguine expectations.

THE annual convention of the Nebraska Retail Hardware Association, J. Frank Barr, secretary, Lincoln, which will be held at Omaha, February 4, 5, 6 and 7, promises to be the largest and best attended in the history of the organization. The Hardware exhibition of manufacturers' products will be an interesting one, more than 50 well-known concerns having already engaged space and only a few desirable spaces remaining. During the past year the Nebraska Association has added nearly 100 members to its rolls, and further accessions are expected at the annual gathering. The mutual insurance company, conducted under the auspices of the association, also shows a large increase in business, the number of policies having more than doubled during the year.

WE understand that an amicable settlement of the differences between Daniel Stern, editor and proprietor of the *American Artisan*, and the officers of the National Retail Hardware Association, has been reached and that mutual retraction and withdrawal of all charges and statements made on both sides has been agreed upon.

THE Tin Plate and Metal business of H. R. DeMilt & Co., 238 Water street, New York, established nearly 40 years ago, has been changed into a corporation under the laws of the State of New York, taking effect January 1, under the name of the H. R. DeMilt Company. The new corporation has taken over the assets and property as a going concern, and will settle the accounts and collect the debts of the old firm. The management and control of the business continue unchanged.

TROUT HARDWARE COMPANY, which has for some years been located at 174-178 East Lake street, Chicago, has just taken a long lease on the buildings at 45-49 Lake street, which is within a few blocks of its present location. The company will have about one-third more space than heretofore and shipping facilities of a greatly improved character. An increase in capital has also been arranged for, which will place the concern in better shape to handle its large jobbing business than ever before.

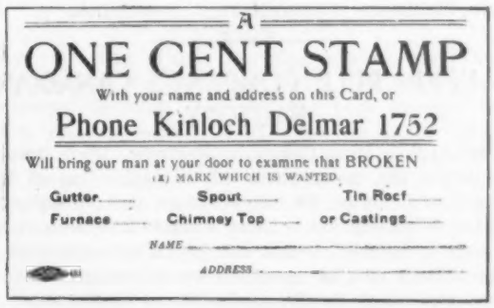
THE BERGER MFG. COMPANY, Canton, Ohio, held its annual salesmen's convention in that city on the 27th, 28th and 29th ult. The different sessions were in charge of A. T. Enlow, sales manager of the company. The following salesmen were in attendance: Emil Baechel, northeastern Ohio; H. P. Resch, southern and western Ohio; W. J. Myers, Michigan; H. A. Seeger, Illinois; James L. Irwin, Pennsylvania; R. C. Coombs, Chicago; C. E. Hillman, West Virginia and Virginia; C. M. Kennedy, Minnesota and Iowa; L. D. Mercer, northern Indiana and northwestern Ohio; L. H. Lyon, eastern New York, New Hampshire, Connecticut and Vermont; L. N. Larson, Wisconsin; Blair Epperson, Indiana; I. J. Shults, western New York and northern Pennsylvania; F. T. Ridge, Georgia, Tennessee and North Carolina; L. N. Grove, New York City. The company regards the outlook for business for 1907 as exceptionally promising and expects to record a much larger volume of sales than during the past year.

TRADE WINNING METHODS.

This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effect to make it suggestive and of practical use to the trade.

BLOTTERS, POSTALS, &c., FOR BUSINESS CONVASSING.

CARRYING on a business that is principally confined to his immediate section of the city, Jos. Schrader, 1823 North Grand avenue, St. Louis, Mo., does little or no newspaper advertising, but resorts to other methods of keeping himself before the public. Blotters, postals, circulars, &c., are sent out at regular intervals, which we


A
ONE CENT STAMP
With your name and address on this Card, or
Phone Kinloch Delmar 1752
Will bring our man at your door to examine that BROKEN
(X) MARK WHICH IS WANTED.
Gutter Spout Tin Roof
Furnace Chimney Top or Castings
NAME
ADDRESS

Postal, 3½ by 5½ In., for Summoning a Man to Look After Repairs.

understand are quite effective as winners of business. One of the blotter series is illustrated herewith. It will be observed that Mr. Schrader makes good use of pictorial cuts in enforcing his position as an up to date and aggressive merchant. We also reproduce the back of a postal sent out by him some time since. This will be

One of a Series of Blotters, 4 by 9 In., Sent Out Monthly.

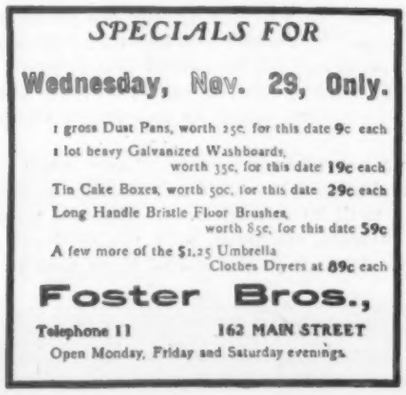
recognized as an efficient means of familiarizing his public with the fact that the job work covered by the postal is one of his specialties, while it also facilitates sending for Mr. Schrader's representative in case his presence is desired in connection with any of the repairs enumerated. A boy is employed to distribute circulars of a miscellaneous character every two weeks, the blotters and postals being mailed once a month.

WINDOW DISPLAY ILLUSTRATIONS IN THE IRON AGE.

THE editors of *The Iron Age* are always glad to receive photographs of Hardware window displays and to reproduce in the columns of the paper those which are sufficiently attractive and original to be of interest to the trade at large. An effective display of Asheville Hardware Company, Asheville, N. C., was recently illustrated, a fact which the company made use of in its advertising reproducing the cut in a local paper and referring to the incident with a pride which conveyed by implication a compliment to *The Iron Age*.

NEWSPAPER ADVERTISING OF A NEW ENGLAND HOUSE.

FOSTER BROS., Northampton, Mass., do most of their advertising through the newspapers, as they consider this the best medium of reaching and interesting the public outside of effective show window exhibits.


SPECIALS FOR
Wednesday, Nov. 29, Only.
1 gross Dust Pans, worth 25c. for this date 9c each
1 lot heavy Galvanized Washboards, worth 35c. for this date 19c each
Tin Cake Boxes, worth 50c. for this date 29c each
Long Handle Bristle Floor Brushes, worth 85c. for this date 59c
A few more of the $1.25 Umbrella Clothes Dryers at 89c each
Foster Bros.,
Telephone 11 162 MAIN STREET
Open Monday, Friday and Saturday evenings.

Advertising Specials for One Day Only, Actual Size 4 In. Square.

They advertise regularly in the town's two daily papers and also in two weekly papers published in nearby places. The announcements in the dailies are changed at least twice a week and at certain periods of the year as often as every other day. The firm makes it a point to feature single articles or lines, and whenever possible cuts are used to catch the eye and compel attention.

The Messrs. Foster have found that it pays handsomely to advertise goods in which the fair sex are interested, as a rule they ponder and devote more time to the reading of advertisements than men are prone to do. A fine trade has been developed in House Furnishings as a result of the firm's policy in this regard.

Herewith we reproduce, reduced one-half, one of their announcements concerning this line. It will be observed that special prices in effect for one day only are offered. Other specials have recently been brought to the attention of close buyers in Coal Hods, Enameled Ware, Roasting Pans, &c. The firm does not limit itself to any regular amount of space, this being determined by the character and importance of the subject of the announcement. The advertisement reproduced is of a minimum size. Specimen advertisements with which we have been favored have been set up with good taste and judgment, which has doubtless had much to do with their business bringing results.

HARDWARE SALESMEN'S DINNER.

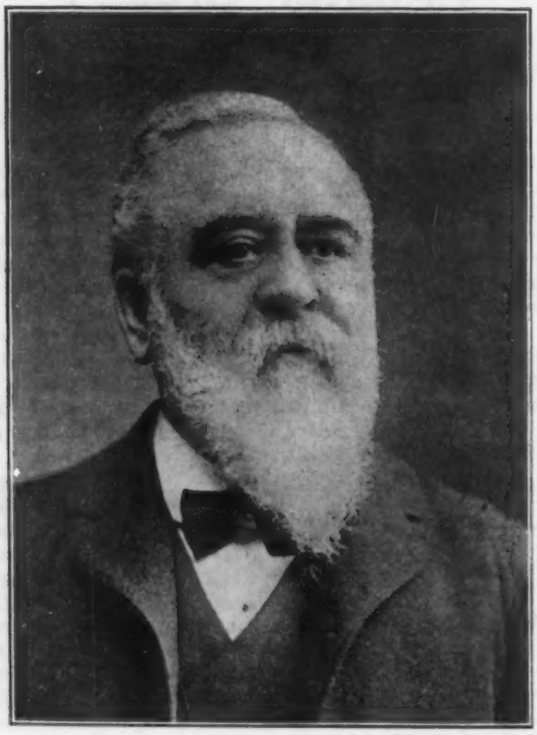
ALL arrangements have been completed for the dinner of the Hardware salesmen of Greater New York, which is to be held at the Hardware Club, Saturday evening, February 9. The accommodations are limited and the committee reports that the demand for tickets from the salesmen themselves has been so great that it has been found necessary to withdraw the invitation to friends in the trade, which was originally extended. Therefore the affair will be strictly a dinner of Hardware salesmen, who will have for their guests a number of men prominent in the trade.

THE general partners heretofore trading as Lyon, Conklin & Co., Baltimore, Md., have incorporated, and will continue the jobbing business under the style of Lyon, Conklin & Co., Incorporated, at the present location, 13-19 Balderston street. William L. Lyon is president and Edgar Lyon, vice-president.

DEATH OF T. HENRY ASBURY.

T. HENRY ASBURY, president of the Enterprise Mfg. Company, Philadelphia, Pa., died at his winter home in Clearwater Harbor, Fla., on Friday, January 11th. Born October 19, 1838, at "The Crescent," a suburb of Birmingham, England, he started in early life to carry out a motto which throughout all his career has been his ideal, "Aim high, aim true." He left his home in England when 18 years of age against the protests of both of his parents. His father told him that "A rolling stone gathered no moss," but he replied that it would "naturally become bright." His mother on his leave taking gave her wish in writing which he had prized highly all his life.

After a very stormy passage of over seven weeks he landed in Philadelphia with only enough capital to pay his board until he secured work. His first position was with T. Stewart, machinist, at a promised salary of $5 per week, although at the end of three months his pay



T. HENRY ASBURY.

had been thrice raised voluntarily, but business became so dull that the shop was forced to close, but being willing and anxious to work he found employment at Sharp's Rifle Company and remained there until the panic of 1857 closed these works also. He then went to work for Dr. Gallagher and during the time he was employed by him he helped perfect the well-known Gallagher Gun.

When the war broke out, the late Henry Disston, having received a very large order from the Government for Cavalry Bits, induced Mr. Asbury to accept a position as foreman in his works. It was while in this capacity he employed John G. Baker, who afterward associated himself with Mr. Asbury under the firm name of Asbury & Co. This firm made and put on the market a Screw Indicator, patented by Mr. Asbury, and also did a general machine business. Mr. Baker then invented a self-measuring Faucet for drawing and measuring molasses, heavy oils, &c., which this firm made and sold in large quantities. Realizing at this time the advisability of a selling organization in connection with the manufacturing Mr. Asbury combined Asbury & Co. with Smith, Seltzer & Co., who were then wholesale Hardware jobbers, and organized the Enterprise Mfg. Company on September 8, 1866. Small quarters were secured at American and Dauphin streets, and a small machine shop and foundry were built. Through the untiring energies and inventive genius of both Mr. Asbury and Mr. Baker the business steadily grew until now its output is shipped to all parts of the globe and over 800 people are employed.

Mr. Asbury was a man of keen judgment and always believed that it was a waste of time to make anything but a first-class article, and expressed on many occasions the thought that there were enough people wanting such articles to keep him busy. Mr. Asbury's home life was ideal. In the early eighties, with a family of five children, he purchased a large tract of land in the suburbs of Philadelphia, believing that such investment would be wise, as was demonstrated later, and also that his children might make their several homes near him.

Mr. Asbury is survived by his widow, two sons, Charles W. and Harry E. Asbury, and three daughters, Mrs. C. E. Gadbury, Mrs. A. C. Harmer and Mrs. N. H. Rand. Charles W. Asbury occupies a conspicuous and influential position in the trade as president of the American Hardware Manufacturers' Association.

LUFKIN RULE COMPANY'S CANADIAN FACTORY.

THE Lufkin Rule Company, Saginaw, Mich., has just begun the manufacture of its entire line of Measuring Tapes, Rules, &c., at Windsor, Ont., designed for the Canadian market. Land enough has been bought, not only for present needs, but for future expansion, the brick factory now in operation being equipped with improved machinery for the production of these goods. The plant is in charge of a competent chief, educated in the parent factory at Saginaw, aided by a staff of skilled assistants. The proximity of Windsor to Saginaw makes feasible frequent trips back and forth in a day. The Canadian trade of the Lufkin Rule Company, especially since H. G. Hollis, New York manager, began to give it close attention about six years ago, has expanded to such a degree that the establishment of a factory on Canadian soil has become almost compulsory. The occurrences of the last two or three years along tariff lines, resulting from the customs laws passed by the Canadian parliament, and particularly that portion popularly known as the antidumping clause, coupled with the restrictions and differentials to favored nations of a reciprocal nature, has caused many American manufacturers to establish factories in Canada. The managers of the Lufkin Rule Company have given this enterprise careful thought for about two years and what has already been accomplished is the result of much consideration.

PHILADELPHIA HARDWARE MERCHANTS AND MANUFACTURERS.

THE twenty-first annual meeting of the Hardware Merchants and Manufacturers' Association of Philadelphia was held in its rooms at the Bourse Building January 15, Vice-President E. S. Jackson occupying the chair. The business transacted was largely of a routine nature. Memorial resolutions presented by W. W. Supplee on the death of T. Henry Asbury, who had for many years been identified with this association, were adopted and ordered engrossed as well as spread upon the minutes of the association. The result of the annual election of officers was as follows: John R. Griffith, president; E. S. Jackson, vice-president, and T. James Fernley, secretary-treasurer, all re-elected for another year. Samuel Disston, W. W. Supplee, Thomas Devlin, Ellicott Fisher and Charles Z. Tryon were re-elected directors, while Charles M. Biddle was elected director to succeed James H. Ritter, resigned.

THE *Ironmonger*, 42 Cannon street, London, E. C., England, has recently issued its Ironmonger Diary for 1907, which is a cloth bound book, containing in addition to a large amount of miscellaneous information and advertising lined spaces, three to the page, for each day of the year in which to jot down memoranda. This is the twenty-second year of the publication of the diary.

Correspondence.

THE NORTH DAKOTA PAINT LAW.

To the Editor: In your issue of December 13 a correspondent from Bismarck, N. D., undertakes a defense of the North Dakota Paint law. To begin with, the Paint Manufacturers' Association objected and still objects to the law because it is discriminatory, in its letter unenforceable and in the standard it purports to set absurd. The reason that it has worked at all is that Professor Ladd, to whom its interpretation and enforcement were committed, is a reasonable man, endowed with a good fund of common sense, and, being a chemist, he has not demanded the impossible.

A Misleading Label.

Any one who knows anything about Paints knows that it is only the tints and whites that contain either white lead or zinc. None of the pure browns, blues, greens, yellows, reds or blacks contain either, and the proportion of such Paints consumed is perhaps larger than the consumption of whites and tints. But the North Dakota law says that all Paints not consisting of lead, zinc., &c., must be labeled, and hence by implication are adulterated. Thus pure lampblack, pure Indian red, pure mineral brown, pure ocher, pure Siennas, umbers, &c., must, when the law comes to be applied in its entirety, bear a label which the public has been led to believe implies impurity.

An Elastic Standard.

Your correspondent asserts that the law sets a standard. As a matter of fact, it sets a very elastic standard, for under this law pure oxide of zinc is standard, as well as pure carbonate of lead (whatever that may be), as are also any proportions of the two in combination.

This is something like making mutton and beef and all combinations of them standard meat—the resultant "pure" hash would disclose wide variations in quality and taste.

Not a Practical Law.

The Paint law of North Dakota as it stands on the statute book is not a practical law. The measure of its practicability is indicated by the fact that no appropriation was made for carrying out its provisions, Professor Worst and Professor Ladd having supplied the requisite funds out of their own pockets. This fact has enabled Professor Ladd to limit the application of the law to the practicable portions of it. Thus far he has concerned himself only with white and light tints of house Paints. When he gets into the colors containing neither Lead nor Zinc there will be confusion worse confounded, since the National Lead Company has advertised throughout North Dakota that Paints bearing a list of contents are adulterated.

A False Standard.

Moreover, the "standard" set by the North Dakota law, in so far as it can be called so, is a false standard. It does not conform to the standard of any large technical consumer, and its inadequacy was absolutely demonstrated in the evidence taken in the suit to which your correspondent refers.

This suit, by the way, was not instituted because the North Dakota law requires Paint to be labeled, but because it discriminates, requiring labels on some Paints and not on others, and because this discrimination is not justified by the facts. Any one reading Judge Amidon's decision can see that the learned Judge was convinced that the law is unfair, but he decided in effect that sovereign States, under recent interpretation of the police power, can go nearly as far as they please in foolishness along these lines. The Supreme Court of the United States is, however, still to be heard from on the subject.

Your correspondent is in error (through ignorance, it is to be presumed) when he states that the North Dakota law instigated the advertising to which he refers. It has been under consideration for at least five years to my knowledge and was decided upon before there was a Paint law in North Dakota. He also makes a misstatement when he says that Paints contain from 5 to 20 per cent. of Gasoline or Naphtha. Some Paints contain Benzine, but that is quite a different thing, and Benzine or something like it will probably in the near future replace Turpentine in all Paints, because of the selfish improvidence of our people in destroying the yellow pine forests. It is a condition and not a theory that confronts us in this case.

What Is Paint?

Your correspondent writes very much in the vein of a retained advocate, and his calm assumption that the North Dakota standard is a real standard is amusing. Let us ask him what he means when he speaks of the "value received," which the people of North Dakota "want for their money." Is it a chemical formula or is it Paint? What is Paint? What is the best Paint? What is the most valuable Paint? Is it not that beautifying and preservative coating which longest preserves and beautifies at the lowest average annual cost? That being the case, what has purity to do with the question? If it were established that a combination of lead and zinc met the requirements the fixing of a standard might be justified; but the question is far from settled, the preponderance of technical evidence being in favor of an addition of not more than one-third inert pigment, such as barytes, silica, &c. Practically every railroad chemist and every Paint chemist of the country believes this. The legislators of North Dakota, however, evidently know better than the chemists who have been studying the matter by test and experiment.

Mislabeling.

As to the matter of mislabeling. Mislabeling is the bane of modern commercialism. It is an ancient abuse. It is familiar to us all in such everyday things as "soda water," which contains no soda and "indigo blue" that contains no indigo. But in thinking over the spasm for reforming every one except ourselves that has recently struck us American people it might be well to remember a certain parable in which the reformers who wished forthwith to trample through the wheat field and tear up every cockle in sight were advised to suffer it to grow until the harvest and then separate and burn it, "lest haply ye tear up the wheat with the cockles." Cutting off the head is an effective remedy for the toothache, but inconvenient and mussy.

What Manufacturers Really Fear.

Your correspondent devotes some space to what he conceives to be the fears of manufacturers. Naturally knowing more on this subject than he can, I am quite willing to take him into confidence and tell him what manufacturers really fear: They fear that with the example of North Dakota before them every venal legislator will attempt a "strike;" that every well meaning but copiously uninformed legislator will attempt to "remedy abuses;" that every trust official that sees good fishing in troubled water will lobby in the interest of the "dear people" and incidentally of his own product; that in the end we shall have State Paint laws as diverse and contradictory as the present divorce laws, so that as a man may be legally married in North Dakota and a bigamist in New York he will be making a Paint that is pure in North Dakota and adulterated in Texas. These are real dangers, threatening not only the Paint trade, but manufacturers of every class—honest and dishonest, wise and otherwise.

Little Objection to a Law Covering All Paints.

Aside from the natural objection of a man who has all his capital, all his energy and half his life invested in a certain business to spreading his formulas before the public, the leading Paint manufacturers are not wholly averse to a fairly considered law requiring the correct labeling of all Paints. Contrary to the belief of your correspondent, they do not, as a class, stand for or defend fraudulent products. But it should always be remembered that a product which is in the view of such a law

as that we are considering grossly adulterated or "impure" is not necessarily fraudulent, since the "pure" Paint may be very poor Paint and the impure Paint very good Paint. The famous freight car color of the Pennsylvania Railroad is grossly adulterated and many per cent. "impure," yet it is about the best Paint for its purpose yet devised.

Were it not for fear of taxing your space I could easily show you how two manufacturers, one using only oxide of zinc and carbonate of lead, and the other oxide of zinc, sublimed lead, bartyes and whiting might produce Paints that would be practically identical in cost, quality and character, and how, in logic at least, the second formula would have the better of it, though in North Dakota the latter would require a label, while the other would go unlabeled.

Manufacturers' Association Co-operating with Professor Ladd.

However, all these questions are to be officially answered, and the Paint Manufacturers' Association is so sure that it is right and the advocates of purity wrong that it has placed at Professor Ladd's disposal the necessary funds for testing the matter to a conclusion. Moreover, it is so thoroughly satisfied with Professor Ladd's fairness and competence as an investigator that rather than have his work hampered it has placed at his disposal an additional fund of $2500 to continue his work in case his State Legislature again fails to make an appropriation for the purpose.

So much for your correspondent and his knowledge of the thoughts and purposes of this association.

G. B. HECKEL,
Secretary Paint Grinders' Association of the United States.
PHILADELPHIA, January 10, 1907.

MONTGOMERY WARD & CO.'S SUIT AGAINST SOUTH DAKOTA MERCHANTS.

AFTER having occupied the attention of Judge John E. Carland of the United States Court, Sioux Falls, S. D., for the greater part of two days, the arguments in what is known as the Montgomery Ward & Co. injunction suit, to which reference has been made in *The Iron Age*, were adjourned until Monday, January 28, when they will be resumed and concluded. The defendants in the action are the officers and directors of the South Dakota Retail Merchants' Association and E. J. Mannix, editor of the *Commercial News* of Sioux Falls. The suit was instituted by Montgomery Ward & Co. for the purpose of attempting to secure an injunction from the Federal court restraining the defendants from continuing their alleged warfare against mail order houses in general and Montgomery Ward & Co. in particular, and from maintaining what is alleged to be a boycott upon the Chicago concern. The plaintiff company alleges that by threats and intimidation the officers of the South Dakota Merchants' Association have coerced jobbers not to sell goods to the plaintiff company, and that by reason of this action the plaintiff company is unable to purchase goods which it requires to fill the orders of its customers.

The continuance of the hearing to January 28 was due to the fact that in the original complaint it was not alleged that E. J. Mannix was a member of the association or that his paper was the official organ of the association. In view of this the attorney for Mr. Mannix, after the arguments had been commenced, made a motion before Judge Carland that the case, so far as it applied to Mr. Mannix and his paper, be dismissed. This motion was granted. Then the attorneys for Montgomery Ward & Co. asked leave to amend the complaint to such an extent as to remedy this defect. Judge Carland held that Mr. Mannix should have time in which to prepare evidence in opposition to his again being brought back into the case, and accordingly Judge Carland continued the hearing until the 28th inst. It is understood that at that time Editor Mannix and his attorney will present affidavits and other evidence which will form one of the most sensational features of the case.

Secretary Tyler's Testimony.

At the opening session of the hearing the testimony of only two witnesses—A. F. Grimm of Parkston, president of the South Dakota Retail Merchants' Association, and L. S. Tyler, Sioux Falls, secretary, was taken. Secretary Tyler was the first witness called to the stand. He stoutly denied having said many of the things attributed to him in the affidavit of a representative of Montgomery Ward & Co. He denied saying to this party that a true report of the convention of the retail merchants, held at Mitchell in January, 1906, has been published; denied that an executive session had been held at Mitchell for the purpose of considering the catalogue house question and explained that it was held for the sole purpose of raising funds to carry on the general work of the association. At the executive session, Mr. Tyler testified, there were no resolutions adopted, no instructions given the secretary or any discussion of the catalogue house question. He admitted having sent to merchants the list of jobbers who had refused to answer letters sent by him requesting that they act with the retail trade; that some of the jobbers had replied to his letters and stated that they could not afford to cease supplying catalogue houses with goods; that the names of these jobbers were not included in the list sent to merchants in South Dakota, and which is alleged in the complaint of the plaintiff company to have been a blacklist.

Mr. Tyler explained that only the names of jobbers who had refused to answer his letters were included in the list, the omissions being regardless of the fact whether those who had answered had stated they sold goods to catalogue houses or not. Secretary Tyler denied saying that the catalogue houses would be put out of business in South Dakota and denied having referred to the list as a blacklist, that the word blacklist was repugnant to him and to the association of which he is secretary. He also denied having stated, as alleged, that the *Commercial News* printed all catalogue house articles requested by the association, and stated that this paper was not the official organ of the association.

On cross examination, Secretary Tyler identified two letters as copies of letters which he had sent out in his official capacity. One of them was a copy of the letter mailed to jobbers in reference to the mail order matter, and the other was a copy of the letter sent to merchants and containing the list of jobbers who had not replied to the letters sent to them.

President Grimm Corroborates Mr. Tyler.

President Grimm was then called to the witness stand. His examination was quite brief. His testimony was almost wholly in reference to matters covered by the testimony of Secretary Tyler, and in every particular he corroborated the testimony of Secretary Tyler.

Attorneys' Arguments.

This completed the testimony and arguments then were commenced in behalf of the defense, Col. Melvin Grigsby opening for the Merchants' Association. Colonel Grigsby put forth the claim that the complaint did not state facts sufficient to constitute a cause of action. He made a lengthy argument, going over the complaint section by section, and contended that the course of the association affecting mail order houses in general could in no wise be termed a boycott against Montgomery Ward & Co., or any other mail order establishment. It was pointed out by Colonel Grigsby that nowhere in the complaint of the plaintiff company does the name of a single jobber appear who has been prevented from selling goods to Montgomery Ward & Co. by reason of the action of the South Dakota Merchants' Association. He ridiculed the allegation of the plaintiff company that it already had suffered damage to the amount of $2000 by reason of the alleged boycott, and that its damages in the near future would reach the sum of $5000 if it was not granted an injunction against the defendants.

Attorneys for the plaintiff company made lengthy arguments in support of their application for an injunction, quoting at length from legal authorities in support of their views. They contended that the course of the defendants was nothing more or less than a boycott, and

that the plaintiff company is entitled to the relief prayed for in the complaint—the granting of an injunction.

The Terms of the Injunction

which the plaintiff company seeks to secure are decidedly sweeping in character. It asks that the Merchants' Association be restrained

> From urging, soliciting or asking any wholesaler or any one else to sever business dealings or relations with the complainant or to cease selling merchandise of any kind to the complainant.
>
> From threatening, coercing or intimidating any manufacturer, jobber, wholesaler or any one else concerning business dealings of any kind with the said complainant.
>
> From preparing, printing, publishing, posting, distributing or uttering any threats of intimidations to any corporation, firm, association or person regarding its or their business relations to the complainant.
>
> From preparing, publishing, posting, making or delivering any communication in the interest of or in furtherance of any blacklist or boycott against any manufacturer, jobber, wholesaler or any one else, the purpose of which is to restrain trade or calculated to prevent and impair free, full and unrestricted competition of all persons with the complainant.

The preliminary proceedings in the case and the adjourned hearing to be held on January 28 cover only the question of the granting of a temporary injunction, to hold and to force until the main case comes up on its merits at a term of the United States Court to be held in Sioux Falls in April of the present year.

STIMULATING THE SALE OF MIXED PAINT.

TO promote the sale of its Mixed House Paints, The Martin-Senour Company, Chicago, Ill., co-operates with the retail merchants in placing before the consumer the merits of its product by means of circular follow-up letters, Paint cards and various novelties which are mailed direct to prospective purchasers. This plan has proved very effective and has greatly increased the Paint sales of its dealers. Upon the establishment of an exclusive agency in a town, and throughout the Paint season, the company aids the merchant in every way in disposing of his stock. Blanks are furnished which the merchant is requested to fill out, giving the names of 100 or 200 residents in his immediate vicinity, to whom advertising matter is sent. Another list is also prepared, containing the names of those contemplating the painting of their homes and to these a series of follow-up letters is sent, and each case is prosecuted to a conclusion until a sale is either effected or word is received that Paint has been purchased elsewhere, or that the improvement is not to be proceeded with.

This series consists of four letters, the first of which calls attention to the purity of the Paint and refers the prospective buyer to the agent in that town. In addition, a number of novelties, testimonial letters, and other printed matter are inclosed, for the purpose of more clearly placing before him the quality of the Paint. If no reply is received letter No. 2 is sent, containing inclosures of additional printed matter and the arguments presented follow out those presented in letter No. 1. Letters No. 3 and 4 are mailed provided no reply has been received, but it is rare that more than two letters have to be sent. If no reply has been received after the conclusion of the series other letters are mailed, and in every case it is the aim to scure an answer of some kind.

By co-operating with the merchant in this way direct communication is practically established with prospective consumers. All of the printed matter is well prepared, and the novelties are such as will be kept. The company likewise furnishes the retailer with Paint cards of its Monarch line of Mixed Paints, which represent his entire assortment of colors. If the smallest line is put in, the Paint card will only contain 16 colors, and these increase by 8 up to 48, which includes the entire assortment. In this way the call for colors not carried in the dealer's stock is entirely obviated. A pamphlet is also provided merchants containing brief quality talks on Monarch Paint, which can be used in a preparation of advertising matter for the daily and weekly newspapers. There are 36 of these talks, all carefully prepared, and which have proved very effective. Cuts are furnished by the company free of cost, and aid materially in making the advertising matter attractive. In co-operating with the merchant in the sale of Floor Paints the names of 100 ladies are furnished by the dealer and the company mails direct color cards, bill files, and other matter. This bill file is invariably utilized by its recipient, and in addition has floor Paint shades affixed on its card, as well as the name of the merchant and his business.

The name of this company was recently changed from the Senour Mfg. Company to the Martin-Senour Company, and officers were re-elected as follows: Z. E. Martin, president; W. F. Senour, vice-president and Wm. Jones, secretary. Mr. Martin commenced with the company as salesman 24 years ago, selling the first bill of Monarch Paint shipped from the factory. Since taking up the active management of the business four years since the sales have more than doubled and considerable new machinery has been installed to meet the constantly growing demand for the company's product. Mr. Senour, vice-president, has been with the company almost from its inception, and Mr. Jones, secretary, has served in various capacities during the past 15 years.

AMERICAN FORK & HOE COMPANY'S TRADEMARK.

THE American Fork & Hoe Company, Cleveland, Ohio, has lately adopted the trademark illustrated herewith. In addition to the labels used by the various factories of the company this new brand will be placed on tools which meet with the requirements of the standard it represents. It is an

American Fork & Hoe Company's Trademark.

endorsement of first quality brands and stamps them as the best produced. The name True Temper was adopted after a good deal of deliberation. Its peculiar appropriateness will be recognized. The design of the trademark also is admirable. The fork and hoe not only reflect the nature of the business and the product, but also embody a hint as to the name of the company.

REQUESTS FOR CATALOGUES, &c.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM FOWLER-RICHARDSON HARDWARE COMPANY, formerly of Graham, Va., which is opening a store at Bluefield, W. Va.

FROM ROADES & PALMER, Farmersville, Ohio, who have just embarked in the Hardware business.

FROM EAST LIVERPOOL HARDWARE COMPANY, East Liverpool, Ohio, which has been incorporated for $10,000 to conduct a Hardware, Stove, Paint, Sporting Goods, Steam Fitting and Roofing business.

FROM W. F. MCBRIDE, formerly manager for Mitchell & McCormack, Voorhees, Iowa, who has opened a Hardware store at Jewell, Iowa.

The Establishment of Witte Hardware Company.

AMONG the cities of the Southwest, St. Louis takes preeminent rank in the distribution of Hardware products, and the growth of the concerns engaged in the jobbing trade in that city is proportionate to the rapid development of the fertile country lying to the south and west. Nor is the influence of these houses limited to this territory alone, as their well organized selling forces are distributed almost throughout the entire country and their competition is a factor wherever freight rates will permit.

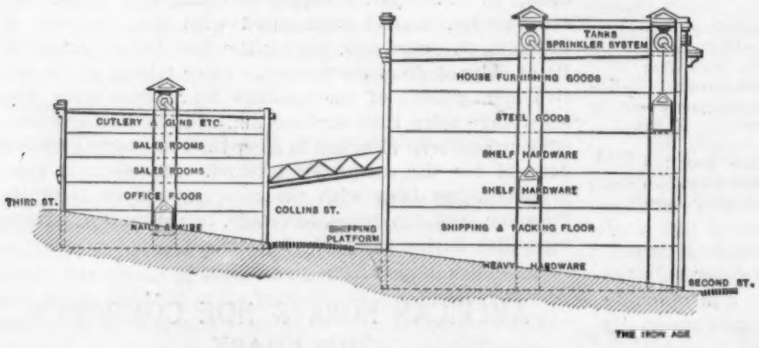


Fig. 1.—Cross Section of Store and Connection Warehouse, Showing Floor Arrangement.

To keep pace with the ever growing demand, the Witte Hardware Company, St. Louis, has extended its jobbing facilities by the erection of a six-story warehouse and has completely remodeled the building which it has occupied for many years on North Third street, and which is now devoted to the offices and salesrooms. For more than half a century this company and its predecessors have been potent influences for the legitimate development of the Hardware jobbing trade in this territory, the business having been established in 1849 under the firm name of Schmieding & Wulfing. In 1874, a partnership between a brother of Otto H. Witte, president of the existing company and the father of F. A. Witte, its secretary, resulted in a change of the firm name to F. A. Witte & Co., and incorporation under the title of the Witte Hardware Company was effected by Otto H. Witte, December 29, 1880, the company therefore having had a corporate existence of more than a quarter century. A building at No. 706 North Third street was originally occupied and the adjoining structure at No. 704 was soon added.

A continued healthy growth required additional facilities, and the building immediately in the rear at Nos. 705 and 707 North Second street was purchased for warehouse purposes, and which occupied a portion of the site of the new building, which has a frontage of 150 ft. and a depth of 110 ft. to Collins street. It is of brick construction, has a carrying capacity of 500 lb. to the square inch, and contains 90,000 sq. ft. of floor space. It is modern in all its details, being equipped with automatic sprinklers, electric fan system for heating and air purification, and electric elevators having a combined capacity of 100 hp.

The Arrangement of the Elevators is unique, separate cars being provided for the receipt and shipment of goods. Of the four elevators, the two located at either end of the east side of the building are used for inbound freight, while the other two are used exclusively for taking down goods for outgoing shipments. They are so widely separated that the receipts and shipments do not come in contact with each other.

A cross section of the floor arrangement of the warehouse is shown in Fig. 1, as well as that of the remodeled building, the two being connected by a bridge extending from the third floor of the Third street building to the fourth floor of the Second street warehouse, the two buildings having a combined floor area of 150,000 sq. ft.

The location of the buildings afford excellent transportation facilities, the new Wabash terminals being only a block north, while the freight houses of the Terminal Railroad Association, Wabash, Chicago, Burlington & Quincy, Missouri Pacific, Iron Mountain, Frisco System, Chicago, Rock Island & Pacific and Chicago & Eastern Illinois Railroads are only distant an average of three blocks.

Fig. 2.—Stock of Builders' and General Hardware on Third Floor of Warehouse.

The distribution of goods in the warehouse is in accordance with customary practice, the lighter and bulkier lines being carried on the upper floors, and the heavy Hardware on the lower levels.

The two receiving elevators have a capacity of 8000 lb. each, and their lower platforms are on a level with the wagon beds from which the goods are unloaded on Second street. After being conveyed to the proper floor in original packages, the goods are either placed on shelves as required for future shipment, or the package

remains unbroken in stock where it is available in this shape for distribution to the trade. All packages are loaded on trucks, each elevator accommodating two, which greatly facilitate the unloading of the elevators and the easy movement of goods on the floors where they are to be stocked. The two elevators for outbound goods

Fig. 3.—Packing and Shipping Room.

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On the sixth floor is carried the entire stock of Tinned, Galvanized and Enameled Ware, Eave Troughs, Spouting and other light bulky goods. To economize space shelves have an upper deck, and platforms are provided to secure goods beyond the reach of the stockmen, eliminating ladders entirely. This system has been adopted with great success on all the floors. On the fifth floor the stock of steel goods, such as Spades, Shovels and Agricultural Tools, is carried, while the fourth floor is devoted to Mechanics' Tools and, as shown in Fig. 2, the stock of Builders' and Shelf Hardware is carried on the third floor. A duplicate stock is always on hand from which the shelves are constantly kept filled, and from which current orders are made up. The hight of the shelving permits the order clerks to reach all goods without the use of ladders or platforms.

The Shipping and Packing Department,

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Fig. 4.—Sample Room of Cutlery and Sporting Goods.

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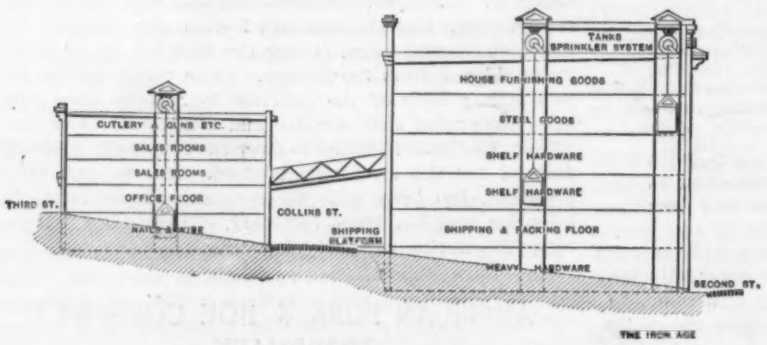

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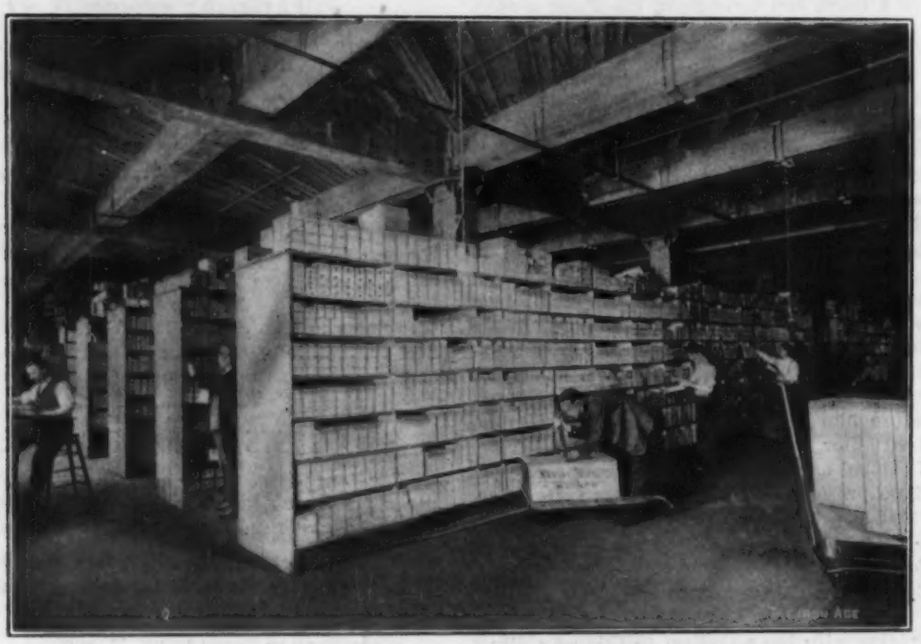

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of Black and Galvanized Sheets, Bolts and other heavy Hardware, the heating plant likewise opening from this floor, outside of the building under Collins street. Two enclosed storage tanks with a capacity of 8000 gallons each are on the roof and provide the water supply for the sprinkler system.

The Executive Offices and Sample Rooms

occupy the entire North Third street building, with the exception of the basement, where a stock of Nails and Wire is carried temporarily. The sales, billing, buying and executive departments are assembled on one side of the first floor, and the Cutlery and Sporting Goods showroom is on the other side as shown in Fig. 4. The stock is very complete, the Gun display containing 182 sizes and makes, without duplication. All of the finer grades of Cutlery

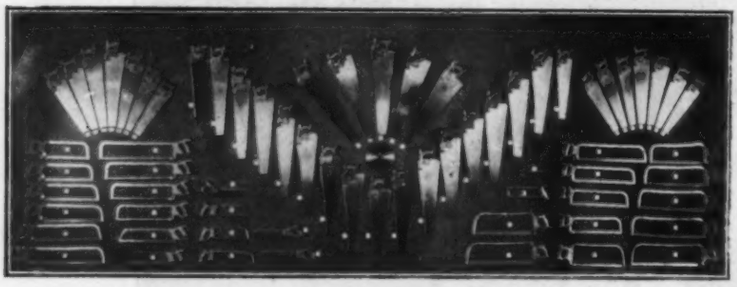


Fig. 5.—Wall Display of Saws.

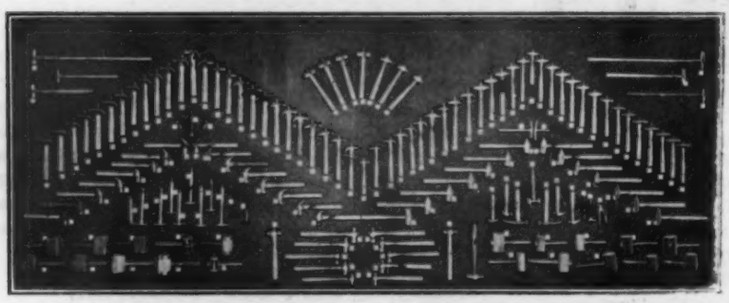


Fig. 6.—Wall Display of Hammers.

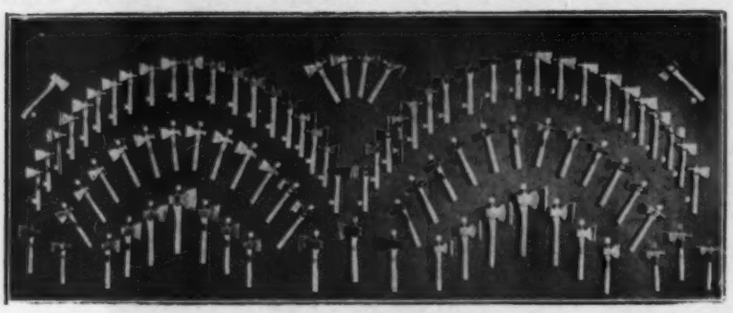


Fig. 7.—Wall Display of Hatchets.

are carried in handsome glass cases and cheaper grades are displayed on shelves extending the length of one side. This department is entirely enclosed, wire gratings shutting it off from the office in the rear and the side entrance from the executive department. Keys are provided the employees in this section only, thus limiting the responsibility for the goods to them, and since the adoption of this method the company has not suffered from petty peculations. The front of the one-half of the second floor is used as a Builders' Hardware showroom, and in the rear the samples of Mechanics' Tools are displayed on the wall and in cases.

The Wall Displays,

in addition to being attractive, are well arranged for the practical purposes for which they are intended, portions of which are shown in Figs. 5, 6 and 7. House Furnishing Goods and Agricultural Implements and Tools are displayed on the other side of this floor. Hay Carriers, Door Hangers and kindred goods are all mounted on tracks and are shown in operation. Cutlery and Sporting Goods are carried in stock on the third floor, while the advertising department and printing plant are on the fourth floor. The company prints all its catalogue pages, price sheets, loose leaf catalogues and all such emergency matter which must be handled expeditiously.

AUSTRALIAN NOTES.

FROM OUR SPECIAL CORRESPONDENT.

SINCE writing last Hardware of pretty well every sort has been in more than good demand in the various States, and traders are filled with hope of a real good year. On present indications these hopes will be realized, and the exports both in wool and wheat bid fair to make another record. The output of gold is steadily increasing, and mining requirements consequently are moving upward.

The building trade is still very active, although here in Melbourne at the moment of writing there is a great deal of uncertainty connected with it, owing to the action of the bricklayers. This trade is paid at the rate of 12s. per day of 8 hr., and the men are out on strike for a reduction of the week's work from 48 to 44 hr. without any corresponding reduction in wages. The stonemasons, who, of course, are closely allied with the bricklayers, already enjoy a 44-hr. week, but it is not expected that they will come out in sympathy with their brethren. The public sympathy is certainly not with the strikers, and it is anticipated and hoped that the men will be defeated.

It would seem at present that Australia's capacity for the use of rabbitproof Wire Netting is absolutely unlimited, owing to the rapidity with which the rabbits increase and move from district to district. The Victorian Government has decided to utilize prison labor for making Wire Netting, and a contract for eight machines for the manufacture of this article has been awarded Henry Vale & Sons of Sydney, at a cost of £4943.

While under our present system the labor employed in the jails does not seem remunerative, it is still an open question as to how far prison labor should compete with outside trades. If, however, prison labor is to be used at all there can be no question what Australia's chief requirements are: First, the making of good roads, and secondly, the reduction of the rabbit pest, so there is not likely to be much outcry against the action of the State Premier.

The Australian Commonwealth Arsenal has not as yet been called into being, and it is questionable if necessity arose to-day for this nation to fight for its existence whether there would be enough arms and ammunition available to last our small defense force through a couple of engagements. Certainly it would be impossible to arm every available fighting man. The country is rapidly waking up to the danger of its present methods, and local manufactories for the production of small arms and ammunition are certainties for the near future.

The Victorian Hardware Assistants' Association is still on the upward move, and will shortly take over new premises in Little Collins street, Melbourne, right in the heart of the Hardware trade.

The Goodman-Thompson Hardware Company, Pendleton, Ore., has been succeeded by the Goodman Hardware Company, recently incorporated.

WELLS BROS. COMPANY'S NEW CATALOGUES.

WELLS BROS. COMPANY, Greenfield, Mass., New York office, 56 Reade Street, has just issued two catalogues, No. 1 and No. 20. The former includes Thread Micrometers and Limit, Standard Thread, Screw Pitch and Standard Pipe Thread Gauges. Catalogue No. 20 relates to Bolt Cutters, Collects, Countershafts, Dies, Machine Nut Taps, Tap Chucks and Tap and Die Grinders.

CALENDARS, Etc.

HORTON MFG. COMPANY, Bristol, Conn.: Attractive calendar advertising Bristol Steel Fishing Rods. It is furnished free to dealers in Fishing Tackle; others, if copy is desired, should forward 10 cents.

AMERICAN SCREW COMPANY, Providence, R. I.: Attractive folder extending greetings for the season.

M. G. RODEARMEL, manufacturers' agent, Minneapolis, Minn.: Neat memorandum book, with list of manufacturers represented.

MISCELLANEOUS NOTES.

Cincinnati Chain Ice Tongs.

E. G. Schutte Company, 230-232 Stark street, Cincinnati, Ohio, is making a line of Cincinnati chain ice tongs, from 10 to 16 in. in size. They are alluded to as working easily, lifting quickly, and as standing hard usage. They are made light, with correct curve, of best tool steel, by skilled mechanics. The company will be pleased to send a sample of the tongs for trial.

The Dana Peerless Freezer.

A peculiar feature of the Peerless ice cream freezer, manufactured by the Dana Mfg. Company, Cincinnati, Ohio, is that the can revolves around the dasher, the dasher not moving at all. The point is made that this construction permits the crank to be turned without effort until the cream is frozen completely, three minutes being the freezing time. The cream is claimed to be frozen evenly—that is, as much frozen in the center as at the edge. The gears of the freezer are inclosed in a ball-like frame, imparting the motion of the crank to the can. The gears are so arranged that they cannot get out of order, nor do they catch the ice or salt.

Globe Lawn Mower and Mfg. Company.

Globe Lawn Mower & Mfg. Company, Reading, Pa., has added to its line for 1907 a new high grade ball bearing mower. The machine is called the Eagle and has 11-in. wheels. It is triple gear, which, it is said, gives it exceptional power and makes it very easy of operation. The company states that the machine has been tested out and works succesfully, being especially adapted to use in parks, &c.

Hygiene Kitchen Cabinet.

Hygiene Cabinet Company, Carlisle, Ind., is manufacturing the enameled steel kitchen cabinet reproduced herewith. It is made entirely of metal, enameled inside and out, with the exception of a bread board which is 18 x 24 in. in size. There is a French plate scallop edged mirror in the upper middle door. It is stated that none but the best material is used in these cabinets and that the metal work and enameling are done by workmen of skill and experience. Four colors are obtainable: Brown, olive, maroon and wine color, with the interior in light blue. Three coats of enamel are used, each being baked on from four to six hours. The cabinet is declared to be mouse and vermin proof and absolutely sanitary, as it will not harbor germs or retain taints from impure or decayed foods. It can be thoroughly sterilized at any time, being washed, scalded, sunned and aired without the least injury. It is not susceptible to atmospheric changes

Hygiene Kitchen Cabinet.

and therefore will not warp, swell or shrink under any conditions.

Switch Attached to Alarm Bell of Clock.

The accompanying illustration shows a new alarm clock manufactured by the Western Clock Mfg. Company, La Salle, Ill. A special feature of this clock is the brass switch attached to the bell, whereby the alarm can be shut off at will. The pivots and pinions in the clock are made of extremely thin, hard steel piano wire, which contribute to ease of movement and durability of its

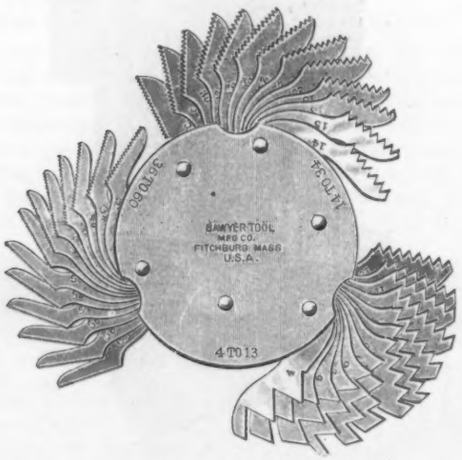
Switch Attached to Alarm Bell of Clock.

works. The clock has barreled springs and a very fine, hard steel pallet escapement, instead of the pin lever escapement commonly used in such articles.

E. C. ATKINS & Co., Indianapolis, Ind., have closed a deal whereby they secure the entire right to make and sell the Rogers belt punch. This little device for punching holes in belts, straps, &c., is light, convenient and does its work efficiently. The blade of sharpened steel slips into the handle, so that it is entirely protected when not in use. To operate it is only necessary to pull out a thumbspring, which fits into notches in the handle. The blade is graduated and slightly concave, so that the size of the hole to be cut may be regulated by the amount of blade exposed. By slight pressure the blade is forced through the belt or strap and by turning the handle around once an even hole of uniform size is easily cut. The punch is retailed at 50 cents.

The Sawyer Screw Pitch Gauge.

The Sawyer Tool Mfg. Company, Fitchburg, Mass., is putting on the market an entirely new style of screw



Sawyer Screw Pitch Gauge.

pitch gauge, which concentrates within a very small space and in convenient form a complete range of gauges from 4 to 60 threads to the inch. As will be noted in the illustration the gauges are in three groups and pivoted between the two disks of the case, so that all may be turned back out of the way excepting the one in use. There are 13 gauges in each group, and on the case is stamped the range of each, one group running from 4 to 13, another from 14 to 34 and the third from 36 to 60.

Champion Packing Box for Tubular Wheelbarrows.

The Bryan Mfg. Company, Bryan, Ohio, has patented the box for packing tubular wheelbarrows, shown in the

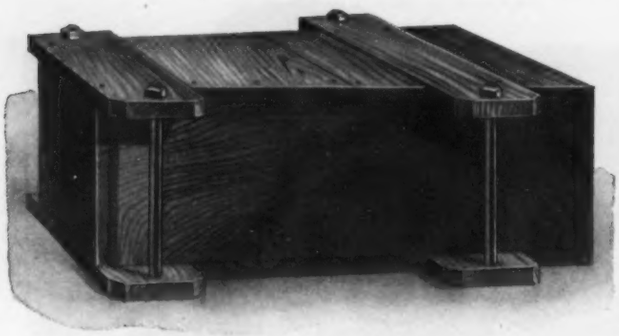


Fig. 1.—Champion Packing Box for Tubular Wheelbarrows.

accompanying cuts. The box illustrated in Fig. 1 is used for carrying all the smaller parts of the frame, legs, braces, bolts, &c., of wheelbarrows to their destination. The box is designed especially for exporting, and insures all parts and pieces arriving at destination without loss and at the same time. Putting the box between the handles, Fig. 2, makes its destruction almost impossible. The compact packing so reduces the cubic measurements that from $1.20 to $3 per dozen is saved in freight, according to the country to which the goods are shipped.

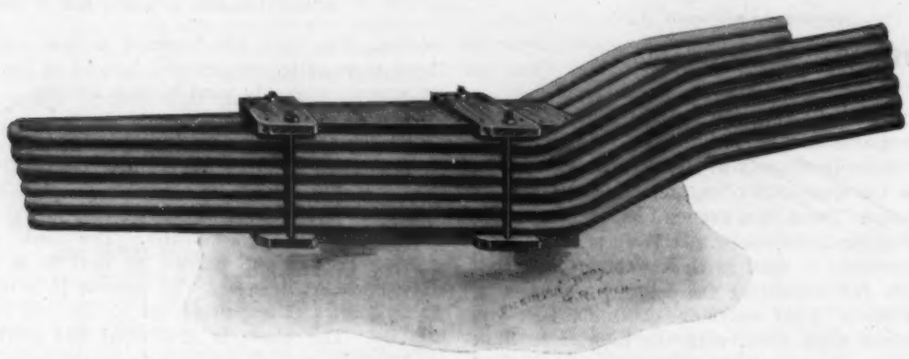


Fig. 2.—The Box Between the Wheelbarrow Handles.

The Reed Patent Vise.

The Fulton Machine & Vise Company, Lowville, N. Y., is offering the universal, vertical and horizontal swivel vise shown in the accompanying cuts. Fig. 1 represents the vise in ordinary position. In Fig. 2 one of the angles

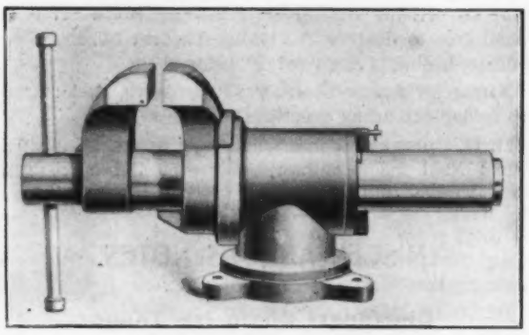


Fig. 1.—The Reed Patent Vise.

to which the vise can be turned is shown. It can be fastened at any angle and when placed in any of the different positions it is guaranteed not to slip on any work for which the different styles and sizes are adapted. The jaws and both swivels are fastened or released with one operation of the lever, and there are no obstructions above the bench to interfere with the mechanic on any kind of work. The jaws can be tipped to or from the workman

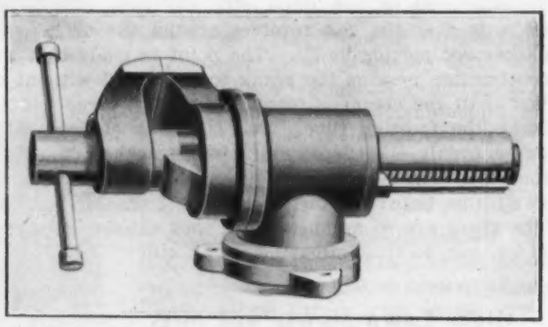


Fig. 2.—The Reed Vise with Jaws Tipped.

without in any way raising the body from its foundation, thereby affording greater strength and durability. The vises are adapted to machinists, locomotive works, structural iron builders, carriage, gun, sewing machine and furniture manufacturers, jewelers, and mechanics generally. The vises are made in six sizes, with 2 to 6 in. jaws, weighing from 4½ to 155 lb. each.

Cast Iron Chimney Cap and Flue Thimble.

Sterling Foundry Company, 20 Main street, Sterling, Ill., is offering the cast iron chimney cap and the flue thimble shown in the accompanying cuts. The chimney cap, Fig. 1, is designed to replace the galvanized sheet iron hood, and being made of cast iron will last much longer. The legs project inside the chimney to prevent the cap blowing off, and it is not necessary, it is explained, to use mortar or cement to fasten the cap in place. The legs have a radial adjustment, so that each of the two sizes of caps will fit any chimney up to the largest size for which they are designed. Cap No. 10½ is for chimney flues 4 x 8 to 8 x 12 and has collar for 8-in. pipe; cap No. 12 is for chimney flues 8 x 16 to 12 x 12 and has collar for 10-in. pipe. The flue thimble, Fig. 2, is also made of cast iron and is offered in two sizes—No. 1, 6 in., and No. 2, 7 in.

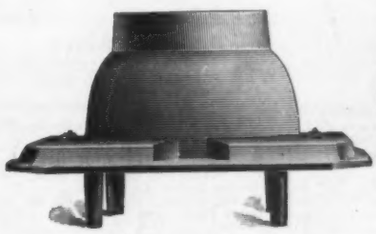


Fig. 1.—The Best Chimney Cap.

Fig. 2.—The Best Chimney Flue Thimble.

Imperial Steel Step Ladders.

Shoecraft-Smith Mfg. Company, Sturgis, Mich., is manufacturing the steel step ladder illustrated herewith. In Fig. 2 the steel frame is shown, made of cold roll steel bands formed in angles and guaranteed to support all the weight possible to put upon it. Rivets are used throughout in its construction, and by the use of steel saddles upon which the steps rest the weight placed upon the steps is supported by the saddles. The company has found by experience that good, clear, well seasoned wood steps are the best in every respect, and if any should become broken they could easily be replaced. The steps are placed in the saddles and are held in position by four screws which enter the steps from the under side. This eliminates the necessity of using nails or screws to fasten the steps to the risers, which is apt to cause them to split out. Steel parts of the ladder are enameled black and wood parts are painted a lemon yellow. The ladders are made in 4, 5, 6, 7 and 8 ft. sizes, with shelves. The last three sizes are made with an extra 1½-in. steel brace between top and bottom so as to prevent any lateral motion.

Fig. 1.—Imperial Steel Step Ladder.

Fig. 2.—Imperial Steel Step Ladder Frame.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	℔ gal.
Linseed, City, raw	42 @43
City, Boiled	43 @44
State and Western, raw	41 @42
Raw Calcutta, in bbls.	@70
Lard, Extra Prime, Winter	76 @77
Extra No. 1	50 @51
No. 1	44 @46
Cotton-seed, Crude, f.o.b. mills	@..
Summer Yellow, Prime	40½@40¾
Summer White	@47
Sperm, Crude	92 @93
Natural Winter	65 @66
Bleached Winter	68 @69
Bleached Winter, Extra	70 @72
Tallow, Prime	55 @56
Whale, Crude	35 @36
Natural Winter	45 @46
Bleached Winter	47 @48
Extra Bleached Winter	49 @50
Menhaden, Brown, Strained	29 @32
Light, Strained	29 @32
Northern	28 @..
Southern	27 @..
Cocoanut, Ceylon	℔ lb 9¼@ 9½
Cochin	℔ lb 9¾@10
Cod, Domestic, Prime	30 @35
Newfoundland	34½@42
Red, Elaine	45 @48
Saponified	℔ lb 6 @ 6½
Olive, Italian, bbls., Yellow	66 @69
Neatsfoot, Prime	49 @60
Palm, Lagos	℔ lb 7 @ 7⅛

Mineral Oils—

Black, 29 gravity, 25@30 cold test	℔ gal. 10½@11½
29 gravity, 15 cold test	11½@12½
Summer	10½@11½
Cylinder, light filtered	18 @19
Dark, filtered	16 @17
Paraffine, 903-907 gravity	13½@14
903 gravity	12½@13
883 gravity	10½@10⅝
Red	12½@14

Miscellaneous—

Barytes:	
White, Foreign	℔ ton $18.50@20.00
Amer. floated	℔ ton 19.00@.....
Off color	℔ ton 11.50@15.50
Chalk, in bulk	℔ ton 3.00@ 3.25
In bbls.	℔ 100 lb ....@ .35
China Clay, English	℔ ton 11.00@17.50
Cobalt, Oxide	℔ 100 lb 2.50@ 2.60
Whiting, Commercial	℔ 100 lb .43@ .52
Gilders	℔ 100 lb .55@ .65
Ex. Gilders	℔ 100 lb .60@.....

Putty, Commercial—℔ 100 lb

In bladders	$1.70 @1.85
In bbls. or tubs	1.20 @1.40
In 1 lb to 5 lb cans	2.65 @2.95
In 12½ to 50 lb cans	1.50 @1.90

Spirits Turpentine—℔ gal.

In Oil bbls.	72 @72½
In machine bbls.	72½@73

Glue—

	℔ lb
Cabinet	12 @15
Common Bone	7 @ 9
Extra White	18 @24
Foot Stock, White	12 @14
Foot Stock, Brown	9 @11
German Hide	12 @16
French	10 @40
Irish	13 @16
Low Grade	10 @12
Medium White	14 @17

Gum Shellac—

	℔ lb
Bleached Commercial	47 @48
Bones, Dried	57 @58
Button	40 @60
Diamond I	55 @..
Fine Orange	52 @55
A. C. Garnet	44 @45
Kala Button	37 @38
D. C.	50 @53
Octagon B	@54
T. N.	47 @48
V. S. O.	@56

Colors in Oil—

	℔ lb
Black, Lampblack	12 @14
Blue, Chinese	36 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	12 @16
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

White Lead, Zinc, &c.—

	℔ lb
Lead, American White:	
Lots of 500 lb or over, in Oil	@ 7½
Lots less than 500 lb, in Oil	@ 8
Lead, English white, in Oil	9¾@10
Lead, White, in oil, 25 lb tin pails, add to keg price	@ ⅛
Lead, White, in oil, 12½ lb tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price	@ 1½
Lead, American, Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.	
Zinc, American, dry	5¾@ 5¾
Zinc, French:	℔ lb
Antwerp, Red Seal, dry	8¾
Antwerp, Green Seal, dry	10¾
Paris, Red Seal, dry	9¾
Paris, Green Seal, dry	11
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over	13¼@13¾
Lots of less than 1 ton	13¾@13⅞
Zinc V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over	11¾@12¾
Lots of less than 1 ton	12¾@12¾

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	℔ lb
Black, Carbon	6½@11
Black Drop, American	4 @ 6
Black Drop, English	5 @15
Black, Ivory	16 @20
Lamp, Com	4 @ 6
Blue, Celestial	4 @ 6
Blue, Chinese	30 @33
Blue, Prussian	28 @32
Blue, Ultramarine	4½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3.10@3.25
Green, Chrome, ordinary	3½@ 7
Green, Chrome, pure	17 @25
Lead, Red, bbls., ½ bbls., kegs	@ 7¾
Litharge, bbls., ½ bls., kegs	@ 7¾
Ocher, American	℔ ton $8.50@16.00
American Golden	2½@ 3½
French	1¾@ 2
Foreign Golden	3 @ 4
Orange Mineral, English	10 @12
French	10¾@12
German	8½@10
American	8½@ 8¾
Red, Indian, English	4½@ 6
American	3 @ 3¼
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	℔ 100 lb $0.50@1.25
English	100 lb $1.15@1.75
Sienna, Italian, Burnt and Powdered	3 @ 9¼
Italian, Raw, Powdered	3 @ 6¼
American, Raw	1¾@ 2
American Burnt and Pow'd.	1¾@ 2
Talc, French	℔ ton $17.00@25.00
American	℔ ton 17.00@25.00
Terra Alba, French	℔ 100 lb .90@ 1.00
English	℔ 100 lb .80@ 1.00
American	℔ 100 lb. No. 1. .75@ .80
American	℔ 100 lb. No. 2. .60@ .65
Umber, T'key, Bnt & Pow.	2½@ 3¼
Turkey, Raw and Powdered	2½@ 3¼
Burnt, American	1¾@ 2
Raw, American	1¾@ 2
Yellow Chrome	12½@15
Vermilion, American Lead	10 @25
Quicksilver, bulk	65 @..
Quicksilver, bags	@..
English, Imported	65 @70
Chinese	$0.90@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1906, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Domestic, ₱ doz. $3.00.....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition— See *Caps, Cartridges, Shells, &c.*

Anti—Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs .....$2.00@$3.00

Anvils—American—
Eagle Anvils.....₱ lb @8¼ ¢
Hay-Budden, Wrought.....9¼@9¾ ¢
Trenton .....₱ lb 9¼@9¾ ¢

Imported—
Peter Wright & Sons, ₱ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½ ¢.

Anvil, Vise and Drill—
Millers Falls Co., $18.00.....15&10%

Apple Parers— See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co.....33⅓%

Augers and Bits—
Com. Double Spur.....75@75&10%
Jennings' Pats., reg. finish.....60&5@60&10%
Black Lip or Blued...65@65&5%
Boring Mach. Augers.....70&10%
Car Bits, 12-in. twist.....50&10%
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's 35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list..25%
No. 30, R. Jennings' list.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Wright's Jennings' Bits.....50%

Bit Stock Drills— See *Drills, Twist.*

Expansive Bits—
Clark's small, $18; large, $26...50&10%
Clark's Pattern, No. 1, ₱ doz. $36; No. 2, $18.....60&10&10%
Ford's, Clark's Pattern.....40%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10&10%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$5.50@6.00
Ames .....25&10%
Universal 20%
Wood's Universal.....25%

Ship Augers and Bits—
Ship Augers.....45&5@—%
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 15%
Watrous' .....33⅓&7½%
Snell's 40%

Awl Hafts— See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered...gro.$3@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. $1@$1¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00

Awl and Tool Sets— See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights: Per doz.
First Quality.....$4.75@5.00
Second Quality.....$3.25@4.50
Double Bit, base weights:
First Quality.....$7.00@7.50
Second Quality.....$6.50@6.75

Axle Grease—
See *Grease, Axle*

Axles— *Iron or Steel*
Concord, Loose Collar..4½@5 ¢
Concord, Solid Collar...4¾@5¼¢
No. 1 Common, Loose..3½@4 ¢
No. 1½ Com., New Styles3¾@4¼¢
No. 2 Solid Collar.....3¾@4¼¢
Half Patent:
Nos. 7, 8, 11 and 12....70@75%
Nos. 13 to 14.....70@75%
Nos. 15 to 18.....75@75&5%
Nos. 19 to 22.....75@75&5%

Boxes, Axle—
Common and Concord, not turned lb., 4½@5¢
Common and Concord, turned. lb., 5½@6¢
Half Patent.....lb., 9½@10¢

Bait— Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances— Sash—
Caldwell new list.....50%
Pullman .....50&10@60%

Spring—
Spring Balances.....50&10@60%
Chatillon's:
Light Spg. Balances.....50&10%
Straight Balances.....40@50%
Circular Balances.....50&10%
Large Dial.....30%

Barb Wire— See *Wire, Barb.*

Bars— Crow—
Steel Crowbars, 10 to 40 lb.... per lb., 3@3½¢

Towel
No. 10 Ideal, Nickel Plate..₱ gro. $8.50

Beams, Scale—
Scale Beams.....40%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned $0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned $1.20
No. 10 Wire Tinned.....₱ doz. $1.50
Western W. G. Co.:
No. 1 Electric.....₱ gro. $7.80
No. 2 Buffalo.....₱ gro. $9.00
No. 3 Perfection Dust.....₱ gro. $8.00

Egg—
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.
Turner & Seymour Mfg. Co.: T. & S. Dover.....$6.00
Western, W. G. Co., ₱ gro., Buffalo, No. 2, $8.00; Perfection, No. 3, $9.00.
Wonder (R M. Co.)..₱ gro. net, $6.25

Bellows—
Blacksmith, Standard List..
Split Leather.....65%
Grain Leather.....60%

Hand—
Inch..	6	7	8	9	10
Doz...	$5.50	6.15	6.60	7.15	7.70

Molders—
Inch..	9	10	11	12	14
Doz...	$8.00	9.00	10.50	12.50	14.50

Net Prices

Bells— Cow—
Ordinary Goods...75&5@75&10&5%
High grade.....70&10@75%
Jersey .....75&10%
Texas Star.....50%

Door—
Abbe's Gong.....45%
Barton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....55%

Hand—
Polished. Brass.....60@60&5%
White Metal.....50&10@50&10&5%
Nickel Plated.....50@50&10%
Swiss .....50&10@50&10&5%
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....33⅓@35%

Miscellaneous—
Farm Bells.....lb., 2¼@2½¢
Church and School.....60%
Table Call Bells.....50@50&10%

Belting— Leather—
Extra Heavy, Short Lap..60&5%
Regular Short Lap....60&10&5%
Standard 70%
Light Standard.....70&5%
Cut Leather Lacing.....45%
Leather Lacing Sides, per sq. ft. 25¢

Rubber—
Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard .....60&5@60&10%
Extra .....60@60&5%
High Grade.....50&5@50&10%

Bench Stops— See *Stops, Bench*

Benders and Upsetters, Tire—
Detroit Perfected Tire Bender.....40%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.
Green River Tire Benders and Upsetters 20%

Bicycle Goods—
John S. Leng's Son & Co.'s 1907 list: Chain, Parts, Spokes.....50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks— Tackle—
Common Wooden.....75%
Hartz St. Tackle Blocks.....50@50&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty, Mal. Iron.....50%
Stowell's Loading.....50&10%
See also Machines, Hoisting.

Boards, Stove—
Zinc, Crystal, &c.....40%
Paper Embossed.....40&10%

Boards, Wash— See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co.....33⅓%

Bolts—

Carriage, Machine, &c.—
Common Carriage (cut thread): ⅝ × 6 and smaller .70&12½@—%
Larger and Longer .60&2½@—%
Phila. Eagle $3.00 list May 24, '99 40%
Bolt Ends.....65@65&5%
Machine, ⅝ x 4 and smaller... 70&12½@—%
Machine, larger and longer.. 60&7½@—%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:
Inch.....	3	4	5	6	8
Per doz..	$0.30	.35	.45	.60	.80

Cast Iron Spring Foot, Jap'd:
Inch.....	6	8	10
Per doz.....	$1.20	1.50	2.25

Cast Iron Chain, Flat, Japanned:
Inch.....	6	8	10
Per doz.....	$1.00	1.40	1.85

Cast Iron Flat Shutter, Jap'd., Brass Knobs:
Inch.....	6	8	10
Per doz.....	$0.75	.95	1.25

Wrought Barrel Japd..80@80&10%
Barrel Bronzed.....60&10%
Spring .....70&10@70&10&10%
Shutter .....50&5@50&10&5%
Square Neck.....75@75&10%
Square .....70&10@10%
'Ives' Patent Door.....50%

Plow and Stove—
Plow .....65&10@—%
Stove .....85@85&10%

Tire—
Common Iron.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '84....80%
Eagle Phila., list Oct. 16, '84....82½%
Mount Carmel, list Dec. 28, '99...80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Tap—
Borers Tap, Ring, with Handle:
Inch.....	1¼	1½	1¾	2
Per doz...	$4.80	5.60	6.40	8.00
Inch	2¼	2½		
Per doz.....	$6.65	11.50		

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

Boxes, Mitre—
C. E. Jennings & Co.....30%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection 40%
Seavey 40%
Stanley R. & L. Co.: Nos. 240 to 460, 30%; Nos. 50 and 60.....35%

Braces—
Common Ball, American..$1.25@1.50
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 91 to 123, 207 to 414 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat.60@60&5%
Stanley R. & L. Co.:
Stanley, 35%; Victor.....45%

Brackets—
Wrought Steel.....80@80&5%
Griffin's Pressed Steel.....75&10@80%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf, 75%; Sink...50%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods— See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co.....75&20%
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—
M'f'gr's list, price per gross.
Quart..	10	12	14	
Water, Reg...	25.35	28.00	32.00	25%
Water, Hvy...	45.35	48.00	52.00	
Fire, Rd. Btm.	32.00	34.65	38.65	10%
Well	37.35	41.35	45.35	

Bucks, Saw—
Hoosier.....₱ gro. $36.00

Bull Rings— See *Rings, Bull*

Butts— Brass—
Wrought, High List, Oct. 26, '06. 50%
Cast Brass, Tiebout's.....40%

Cast Iron—
Fast Joint, Broad....40&10&50%
Fast Joint, Narrow....40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70@70&5
Parliament Butts.....70@70&5

Wrought Steel—
Discount.
Reversible and Broad..75%
Light Reversible, Light Narrow 75%
Loose Joint, Narrow, Light Inside Blind, etc.70&10%
Back Flaps, Table, Chest 70%

Extra, 10@10%

Cages, Bird—
Hendryx Brass: Series 5000, 5000, 1100, 10%; 1200, 25%; 200, 300, 600, 900 .....40%
Hendryx Bronze: Series 700, 800..40%
Hendryx Enameled.....40%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb., 4@4½¢
Sharp, 1 prong...per lb., 4½@4¾¢
Burke's Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Gautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

Can Openers—
See *Openers, Can.*

Cans, Milk—

	5	8	10 gal.
Illinois Pattern	$1.35	1.85	2.05 each.
New York Pattern	1.50	2.20	2.45 each.
Baltimore Pattern	1.50	2.20	2.45 each.
Dubuque	1.35	1.60	1.75 each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$18.00	60.00	120.00 gro., net.

Caps, Percussion—

Eley's E. B.....55@55¢
G. D.....per M 34@35¢
F. L.....per M 40@42¢
G. E.....per M 48@50¢
Musket.....per M 62@63¢

Primers—

Berdan Primers, $2 per M..20&5%
Primer Shells and Bullets..15&10%
All other primers per M.$1.52@1.60

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Smgd. $1.90
B. B. Caps, Round Ball....$1.40
Central Fire.....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—

Bed.....70@70&10%
Plate.....60&10@60&10&5%
Philadelphia.....75@75&10%
Acme, Ball Bearing.....33⅓%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....80%
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent low list.....50%
Yale (Double Wheel) low list.....50%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—

American Coil, Straight Link:

3-16	¼	5-16	⅜	7-16	½	9-16
$9.15	6.30	5.25	4.55	4.35	4.15	4.10

⅝ ¾ ⅞ to 1 1-16 1⅛ to 1¼ inch.
$4.00 3.90 3.85 3.95

German Coil.....60&10&10@70%

Halter—

Halter Chains.....60@60&5%
German Pattern Halter Chains, list July 24, '97.....60&10&5%
Covert Mfg. Co. Halter.....35&5%

Cow Ties—
See *Halters and Ties.*

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½—6-3, Straight, with ring. $27.00
6½—6-2, Straight, with ring. $28.06
6½—8-2, Straight, with ring. $32.00
6½—10-2, Str'ght, with ring. $37.00

NOTE.—Add 2c per pair for Hooks. Twist Traces; add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.

Eastern Standard Traces, Wagon Chain, &c.....60&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron.....60&10%
Brass.....60&5%
Safety and Plumbers' Chain.70%
Gal. Pump Chain.....lb. 4@4½%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion.....40%
Oneida Community:
Am. Dog Leads and Kennel Chains. 40@40&5%
Niagara Dog Leads and Kennel Chains.....45@60&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl.-Jointed Chain.....50%

Chain and Ribbon, Sash—

Oneida Community:
Copper Chain, 60&5%; Steel Chain, 60%
Pullman:
Bronze Chain, 60%; Steel Chain, 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft.....$1.25@$3.00
Sash Ribbon Attachments, per set.8¢

Chalk—(From Jobbers.)

Carpenters' Blue....gro., 50@55¢
Carpenters' Red.....gro., 45@50¢
Carpenters' White...gro., 40@45¢

Checks, Door—

Bardsley's.....45%
Pullman, per gro.....$54.00
Russwin.....33⅓%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters,' etc., Chests, with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
Tool Cabinets.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

Chisels—

Socket Framing and Firmer

Standard List.....75@75&5%
Buck Bros.....30
Charles Buck Edge Tool Co.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....60%
Socket Framing No. 15.....60%
Swan's.....75%
L. & I. J. White Co.....30@30&5%

Tanged—

Tanged Firmers.....40%
Buck Bros.....30%
Charles Buck Edge Tool Co.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

Cold— *lb.*

Cold Chisels, good quality..13@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary.:. 9@10¢

Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40%
Beach Pat., each $8.00.....35&5%
Empire.....25%
Blacksmiths'.....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....40%
Universal, Reversible Jaws.....40%
Combination, Reversible Jaws.....40%
Drill Chucks, New Model, 25%; Standard, 40&10%; Skinner Pat. 25%; Positive Drive.....40%
Planer Chucks.....30%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....40%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combination, Nos. 62 and 84.....30%
Geared Scroll, Nos. 33, 34 and 35..30%
Independent Iron, Nos. 18 and 318..35%
Independent Steel, No. 61.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal 11, 12, 16, 17, 13, 14, 15..35%
Universal, No. 42.....30%
Iron Face Plate Jaws, Nos. 29, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72.....50%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

Clamps—

Adjustable, Hammers'.....20@20&5%
Carriage Makers', P., S. & W. Co.....40&10@50%
Besly, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Wood Workers, Hammers'.....40&10%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—

Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....45%

Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7⅛ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White Co.....30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Company:
1902 Chicago Horse, each..$10.75
20th Century Horse, each..$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each.$20.00
Stewart's Enclosed Gear Horse, each.....$6.75
Stewart's Patent Sheep Shearing Machine, each.....$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 30%

Clips, Axle—

Regular Styles, list July 1, '05.80%

Cloth and Netting, Wire—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c.....70%
Compression Bibbs.....65&10%

Coffee Mills—
See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....60%
Leather, Walter B. Stevens & Son's list.....40%

Combs, Curry—

Metal Stamping Co.....40%

Compasses, Dividers, &c.

Ordinary Goods.....70&10@75%
Wm. Schollhorn Co.:
Excelsior Dividers.....55%
Lodi Dividers.....75%

Conductor Pipe,—

L. C. L. to Dealers:

	Galv. Steel.	Charcoal Iron.	Copper. 14, 16&20 oz.
Eastern:			
70&2½%	60%	55&10%	
Central:			
65&12½%	55&5%	30&7½%	
Western and Southern:			
65&7½%	55%	30&5%	
So. Western			
62½&5%	50&2½%	30&2½%	

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal. each..	2	3	4	6	8
Labrador	$1.20	$1.50	$1.80	$2.10	$2.70
Gal.	3	4	6	8	
Iceland, ea.	$1.80	$2.10	$2.40	$3.00	
Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15
White Enameled, 25%; Agate Lined, 25%					

Coopers' Tools—
See *Tools, Coopers'.*

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair and heavier, 29@32¢; lighter than 3 lb. to pair.....31@33¢

Cord—Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 25¢; No. 7, 25½¢; No. 6, 26½¢.
Cable Laid Italian, lb., No. 18, 36¢
Italian, lb., A, No. 18, 25¢; B, 21¢
Common India.....lb. 10@10½¢
Cotton Sash Cord, Tw'ted..17@19¢
Patent Russia.....lb...19¢
Cable Laid Russia.....lb...20¢
India Hemp, Br'd'd.....lb...20¢
India Hemp, Twisted...lb. 12@13¢
Patent India, Twisted...lb...16¢
Anniston Cordage Co.: ℔ lb, solid Braided, Nos. 8 to 12, $1.24; No. 7, $0.24½; No. 6, $0.23½; ℔ doz., 50 ft.: Oriole, $2.00; 50 ft., Columbia, $0.85; 50 ft., Victors, $1.00; 50 ft., 6-Thread, $1.10; 60 ft., 3-Thread, $0.95; 50 ft., Manila, $1.40; 60 ft., Jute, $0.75.
Pearl Braided, cotton, No. 6, ℔ lb, 25½¢; No. 7, 25¢; Nos. 8 to 12, 24½¢
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½¢; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to 10.....℔ lb 23 ¢
Pullman:
Wire Sash Cord.....18%
Sash Cord Attachments, per doz.10¢
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White....℔ lb 40¢
Massachusetts, Drab....℔ lb 45¢
No. 7, 28¢; No. 6, 30¢.
Phoenix, White, Nos. 8 to 12, 27¢;
} 15&10%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen...57½¢
See also Chain and Ribbon.

Wire, Picture—

List July 10, 1906...85&10&10@—
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord.....90%

Cradles—

Grain.....40&12½%

Crayons—

White Round Crayons, Cases, 100 gro., $6.50@$7.50 at factory, but lower prices made by jobbers
Zelnicker's Lumber, ℔ gro, White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.00
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $16.25; Indelibles.....$18.75
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00

Crooks, Shepherds'—

Fort Madison, per doz., Heavy, $7.00; Light.....$6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

Cutters—Glass—

H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

Meat and Food—

American.....30%

Nos.	401	402	403	404	405	406	407
Each	$5	$7	$10	$12	$25	$50	$60

Enterprise:

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

25@25&7½%
No. 202, $1.50.....40&7½%
Dixon's.....℔ doz. 30@30&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal.....40@40&5%
Little Giant.....℔ doz. 40@50%

Nos.	306	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Choppers.....25%
New Triumph No. 605, ℔ doz. $24.00.....40@50%
Russwin Food, No. 1, $24.00; No. 2, $27.00.....45&10&10%
Woodruff's.....℔ doz. 30@30&5%

Nos.	108	150
	$15.00	$18.00

Enterprise Beef Shavers.....25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater.....℔ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife..℔ gr. $18@$20
Slaw Cutters, 2 Knife..℔ gr. $22@$30

Tobacco—

All Iron, Cheap..doz. $4.25@$4.50
Enterprise.....25&30%
National, ℔ doz., No. 1, $21; No. 2, $18.....40%

Diggers, Post Hole, &c.—

Disston's:
Rapid, ℔ doz., $24.00.....25%
Samson, ℔ doz., $34.00.....25%
Iwan's Improved Post Hole Auger.40&5%
Vaughan Pattern Post Hole Augers, ℔ doz., $6.25
Perfection Post Hole Diggers, ℔ doz.....$8.75
Split Handle Post Hole Diggers, ℔ doz., $7.75
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $5.00; Rival, $8.00; Pioneer.....$7.00
Never-Break Post Hole Diggers, ℔ doz., $24.00.....60%

Dividers—See *Compasses.*

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ℔ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Dressers, Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

Drills and Drill Stocks—

Blacksmiths' Common Drilling Machines.....$1.50@$1.75
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....40%
Goodell Automatic Drills.50&10@60&10%
Johnson's Automatic Drills, Nos. 2 and 3.....16⅔%
Johnson's Drill Points.....16⅔%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved.....40%
Ratchet, No. 012.....40%
Ratchet, Celebrated.....40%
Ratchet, Whitney's, P., S. & W..50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—

Bit Stock.....60&10&10@70%
Taper and Straight Shank.... 60&10@60&10&5%

Drivers, Screw—

Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., ℔.....50%
Buck Bros.' Screw Driver Bits.....30%
Champion.....50%
Disston's.....70%
Edson.....60%
Fay's Hol. H'dle Sets, No. 3, $12.....50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, Nos. 20 and 21...25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
New England Specialty Co.....30%
Smith & Hemenway Co., Nevertarn, 40&5%; Elmora.....50%
H. D. Smith & Co.'s Perfect H'dle.40%
Stanley R. & L. Co.'s:
No. 64, Varn. Handles, 60&10%; No. 86, 70%; Defiance, 70%; Hurwood, 55%.
Swan's:
Nos. 7565 to 7568, 50%; No. 7540, 40&10%

Eave Trough, Galvanized—

	Territory. Galv. Steel.	*L. C. L. Galvanized Charcoal Iron.*	*Copper. 14, 16&20 oz.*
Eastern:			
70&30&2½%	70&2½%	30&10%	
Central:			
75&10&5%	65&12½%	30&7½%	
Western and Southern:			
75&10%	60&15%	30&5%	
So. Western:			
75&2½%	65%	30&2½%	

Terms.—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:
Galv. Steel and Galv. C. I.
Standard Gauge.....60&10%
No. 26.....50%
No. 24.....25%
No. 22.....10%
Copper.....50%

Elbows, Stove Pipe—

Edwards, Standard Blue.....40&10&10%
Edwards, Royal Blue.....40&10&10%
Dover, one piece (R. M. Co.)....40&10%
Perfect Elbows.....40%

Emery, Turkish—

	¼ to 46:	5¼ to 220:	Flour.
Kegs.....lb.	5 ¢	5¼ ¢	5¾ ¢
½ Kegs.....lb.	5¼ ¢	5¾ ¢	5¾ ¢
¼ Kegs.....lb.	5½ ¢	6 ¢	6 ¢
10-lb. cans, 10 in case....	6½ ¢	7 ¢	8 ¢
10-lb. cans, less than 10.....	10 ¢	10 ¢	8 ¢
Less quantity..	10 ¢	10 ¢	8 ¢

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice

Fasteners, Blind—See *Squeezers, Lemon.*

Zimmerman's ..... 50&10%
Walling's ..... 40&10%

Cord and Weight—

Ives 33⅓%

Faucets—

Cork Lined ..... 50@50&10%
Metallic Key, Leather Lined .. 60&10@70%
Red Cedar ..... 40&10@50%
Petroleum ..... 70&10@75%
B. & L. B. Co.:
Metal Key ..... 60&10%
Star 60%
West Lock ..... 50&10%
John Sommer's Peerless Tin Key 40%
John Sommer's Boss Tin Key 50%
John Sommer's Victor Mtl. Key. 50&10%
John Sommer's Duplex Metal Key .. 60%
John Sommer's Diamond Lock 40%
John Sommer's I. X. L. Cork Lined .. 60%
John Sommer's Reliable Cork Lined .. 50&10%
John Sommer's Chicago Cork Lined. 60%
John Sommer's O. K. Cork Lined .. 50%
John Sommer's No Brand, Cedar 50%
John Sommer's Perfection, Cedar 40%
McKenna, Brass:
Burglar Proof, N. P. 25%
Improved, ¾ and ⅞ inch 25%
Self Measuring:
Enterprise, ℔ doz. $36.00 ..... 40&10%
Lane's, ℔ doz. $36.00 ..... 40&10%
National Measuring, ℔ doz. $36. 40&10%

Felloe Plates—

See *Plates, Felloe.*

Files— Domestic—

List Nov. 1, 1899.
Best Brands ..... 70&10@75&10%
Standard Brands .. 75&10@75&10&10%
Lower Grade .... 75&10&10@80&10%

Imported—

Stubs' Tapers, Stubs' list, July 24, '97 ..... 33 1-3@40%

Fixtures, Fire Door

Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 ..... $3.75
Fusible Links, No. 96 ..... 50%
Expansion Bolts, No. 107 ..... 60&10%

Grindstone—

Net Prices:

Inch	15	17	19	21
Per doz	$3.25	3.75	4.25	4.75

P., S. & W. Co. ..... 30&10%
Reading Hardware Co. 60%
Stowell's Giant Grindstone Hanger .. ℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy, 40&10%; Light 50%

Fodder Squeezers—

See *Compressors.*

Forks—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Em Potato ..... 60&10%
Victor, Hay ..... 60&15&2½%
Victor, Manure 66⅔%
Victor, Header 65%
Champion, Hay 66⅔%
Champion, Header 65%
Champion, Manure ..... 60&15&2½%
Columbia, Hay ..... 60&20%
Columbia, Manure 70%
Columbia, Spading ..... 70&12½%
Hawkeye Wood Barley 40%
W. & C. Potato Digger ..... 60&10%
Acme Hay ..... 60&20%
Acme Manure, 4 tine ..... 60&10&5%
Dakota Header ..... 60&20%
Jackson Steel Barley ..... 60&20%
Kansas Header 65%
W. & C. Favorite Wood Barley 40%
Plated.—See Spoons.

Frames— Saw—

White, S'g't Bar, per doz .. 75@80¢
Red, S'g't Bar, per doz .. $1.00@1.25
Red, Dbl. Brace, per doz .. $1.40@1.50

Freezers, Ice Cream—

Qt.	1	2	3	4	6
Each	$1.30	$1.60	$1.90	$2.20	$2.80

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*

Hemp $2.75
Cotton 3.20
Waterproof Sgl. Taped .. 3.65
Waterproof Dbl. Taped .. 4.40
Waterproof Tpl. Taped .. 5.15

Extra 10% often given. 25&10%

Gates, Molasses and Oil—

Stebbins' Pattern ..... 80&10%

Gauges—

Marking, Mortise, &c. .. 50@50&10%
Chapin-Stephens Co.:
Marking, Mortise, &c. ..... 50&50&10%
Disston's Marking, Mortise, &c. .. 67½%
Stanley R. & L. Co.'s Butt and Rabbet Gauge 35%
Marking and Mortise 55%
Wire, Brown & Sharpe's 33⅓%
Wire, Morse's 25%
Wire, P., S. & W. Co. 25%

Gimlets— Single Cut—

Numbered assortments, per gro.

Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window

See *Trade Report.*

Glasses, Level—

Chapin-Stephens Co. ..... 60@60&10%

Glue, Liquid Fish—

Bottles or Cans, with Brush .. 25&10@50%
International Glue Co. (Martin's) .. 40%

Grease, Axle—

Common Grade .... gro. $4.50@6.00
Dixon's Everlasting, 10-℔ pails, ea. 85¢; in boxes, ℔ doz., 1 ℔, $1.20; 2 ℔ $2.00
Helmet Hard Oil 25%

Griddles, Soapstone—

Pike Mfg. Co. ..... 33⅓&33⅓&10%

Grindstones—

Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00 ..... 33⅓%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 ..... 30%
Alundum Sickle Grinders, each, Nos. 20A, $6.00; 20A Combined, $6.50 ..... 30%
Alundum Disc Grinders, each, $2.50 ..... 30%

Grips, Nipple—

Perfect Nipple Grips ..... 40&10&2%

Halters and Ties—

Cow Ties ..... 60&5@60&10%
Covert Mfg. Co.:
Web ..... 30&2%
Jute Rope 35%
Sisal Rope 20%
Cotton Rope 45%
Hemp Rope 45%
Oneida Community:
Am. Coil and Halters ..... 40@40&5%
Am. Cow Ties ..... 45@60%
Niagara Coil and Halters .. 45@50&5%
Niagara Cow Ties .... 45&5@50&10&5%

Hammers—

Handled Hammers—

Heller's Machinists' ... 55&10@55&10&5%
Heller's Farriers' ..... 40&3@40&10&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ..... 50%
Peck, Stow & Wilcox, Steel 50%
Fayette R. Plumb:
Plumb, A. E. Nail ..... 40&2½@40&12½%
Engineers' and B. S. Hand ..... 50&12½@60%
Machinists' Hammers ... 50&15@60&5%
Riveting and Tinners' ..... 40&2½@40&12½%

Heavy Hammers and Sledges—

Under 3 lb., per lb. .. 50¢.80&5@..%
3 to 5 lb., per lb. .. 40¢.80&5@..%
Over 5 lb., per lb. .. 30¢ .... 80&10&5@..%
Wilkinson's Smiths' ... lb. 9½@10¢

Handles—

Agricultural Tool Handles

Axe, Pick, &c. .... 60&10@60&10&5%
Hoe, Rake, &c. ..... 40@45&5%
Fork, Shovel, Spade, &c.:
Long Handles ..... 40@45&5%
D Handles 40%

Cross-Cut Saw Handles—

Atkins' 40%
Champion 50%
Disston's 50%

Mechanics' Tool Handles—

Auger, assorted ... gro. $2.50@3.00
Brad Awl ..... gro. $1.65@1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@$2.65; Hickory ..... $2.15@2.40
Socket Firming, Apple, $1.75@$1.95; Hickory ..... $1.45@1.60
Socket Framing, Hickory, $1.60@$1.75
File, assorted ..... gro. $1.30@1.40
Hammer, Hatchet, &c. .. 60¢10@60&10&5%
Hand Saw, Varnished, doz. 80,85¢; Not Varnished .. 65@75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted 75¢
Fore, doz. 45¢; Fore, Bolted 90¢
Chapin-Stephens Co.:
Carving Tool ..... 40@40&10%
Chisel ..... 65@65&10%
File and Awl ..... 65@65&10%
Saw and Plane ..... 40@40&10%
Screw Driver ..... 40@40&10%
Millers Falls Adj. and Ratchet Auger Handles ..... 20&10%
Nicholson Simplicity File Handle .... ℔ gro. $0.85@$1.50

Hangers—

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c

Allith Mfg. Co.:
Reliable, No. 1; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door 50%

Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin 25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door 50%
Elevator 30%
Railroad 50%
Crouk & Carrier Mfg. Co.:
Loose Axle ..... 60&10%
Roller Bearing 70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00 ..... 70%
Roller Bearing, No. 11, $15.00 .. 70%
Roller Bearing, Ex. Hy., No. 22, $18.00 ..... 70%
Hinged Hangers, $16.00 .... 60&10%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion $2.25
Barn Door, Standard ..... 60&5%
Hinged ..... net $6.08
Covered ..... 60&2%
Special ..... 70&5%
Lawrence Bros.:
Advance and Sterling .... 60&2½%
Cleveland and Peerless .. 70&7½%
Clipper, No. 75 ..... 60&2½%
Crown ..... 60&2½%
Cyclone-Tandem ..... net $7.50
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.
Giant 60%
Hummer ..... 70&7½%
New Cyclone, Flexible, $16.00 60%
New York ..... 60&2½%
McKinney Mfg. Co.:
No. 1, Special, $15 ..... 60&10%
No. 2, Standard, $18 ..... 60&10%
Hinged Hangers, $15 ..... 50%
Meyers' Stayon Hangers .... 60&5%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, ... 60&5%
Pioneer Wood Track, No. 3. $2.25
Roller B'r'g St'l Track No. 12 $2.29
Roller B'r'g St'l Track No. 13 $2.50
Roller B'r'g, Nos. 39, 41, 43, ... 70&7½%
Hero, Adj. Track No. 19. 50&10%
Adjustable Track Tandem Trolley Track No. 16 ..... 50&10%
Seal, Steel Track No. 8 ..... $2.25
Auto Adj. Track No. 22. —50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 129, $2.25; No. 121, $2.45; No. 150 ..... $2.50
Safety Underwriters F. D. No. 101 ..... 50%
Tandem No. 44. 2½ and 3 60&10%
Palace, Adjustable Track No. 132 ..... 50&5%
Royal, Adjustable Track No. 122 ..... 50&10%
Ives' Wood Track No. 1 ..... $2.25
Trolley B. D. No. 29 ..... 50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28 ..... $1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2 70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3 ..... 60%
Hinged Tandem No. 48 .... 60&5%
Folding Door B. B. Swivel No. 135 ..... 40%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing 30%
Ajax Hinge Door 60%
Apex Parlor Door ..... 50&10&5%
Atlas 60%
Baggage Car Door 50%
Climax Anti-Friction 50%
Elevator 40%
Express 50%
Lundy Parlor Door 50%
Matchless 60%
Nanser 70%
Parlor Door, 50&10%; Railroad, ... 50&10%
Steel, Nos. 300, 404, 500 ..... 50%
Underwriters' Fire Door 40%
Wild West Warehouse Door .. 50%
Wilbern, No. 0, net, ℔ doz. $9.00
Zenith for Wood Track 50%
A. L. Sweet Iron Works:
Check Back, 70%; Eagle 70%
Climax Anti-Friction ..... 50&10%
Hylo Hinge, New Perfection, Pilot, Pilot Hinge 60%
Rider Wooster 65%
Western Pattern 70%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing. 50&15&10&5%

Extra 50@10% often given.

Hangers— Garment—

Pullman Trouser, ℔ gro., 1 pair Flat Aluminoy, $9.00; 1 pair Round Nickeled, $9.00; 4 pair Round Nickeled, $27.00; 1 pair Flat Gun Metal, $12.00; 1 pair Flat Black Enameled, $7.50; 1 pair Wood Clamp, $13.50; Skirt Hangers, Folding, per gro., $21.00; Coat Hangers, Folding, per gro. $8.00; Garment Hanger Rods, Round Nickeled, per gro., $10.50; Garment Hanger Loops, Round Nickeled, per gro. $10.50
Victor Folding ..... ℔ gro. $9.60
Western, W. G. Co. ..... 75&10%

Gate—

Myers' Patent Gate Hangers, ℔ doz. net $4.50

Joist and Timber—

Lane Bros. Co. 30%

Hasps—

Griffin's Security Hasp ..... 50&10%
McKinney's Perfect Hasp, ℔ doz. .. 50%

Hatchets—

Regular list, first qual. .. 40&7½&—
Second quality ..... 50&10@—

Heaters, Carriage—

Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50 ..... 25%
Clark Coal, ℔ doz., $0.75 ..... 20%

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	1	3	5
Doz. pair	$0.75	1.35	2.70

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	1	1½	2	2½
Doz. pair	$0.70	.65	.60	.55

Mortise Reversible Shutter (Buffalo, &c.):

No.	1	1½	2
Doz. pair	$0.70	.65	.60

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 ..... 10%
Charles Parker Co. ..... 70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00 ..... 20%
Reading's Gravity 60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.85; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter ..... 75&10&5%
Acme, Lull & Porter ..... 75&10%
Queen City Reversible ..... 75&10%
Shepard's Noiseless, Nos. 60, 65, 55 ..... 75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5 ..... 75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5 .... 75&10&5%
Tip Pat'n, Nos. 1, 3 & 5 .... 75&10&5%
Buffalo Gravity Lockin' Nos. 1, 3 & 5 ..... 75&10&5%
Shepard's Double Locking, Nos. 20 & 25 ..... 70%
Champion Gravity Locking, No. 75 .. 75%
Steamboat Gravity Locking, No. 10. 75%
Pioneer, Nos. 060, 45 & 5½ 75%
Empire, Nos. 101 & 103 ..... 70%
W. H. Co.'s Mortise Gravity Locking, No. 2 ..... 60%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with L't'chs.	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	.35

New England:
With Latch ..... *doz.* ... @$2.00
Without Latch ..... *doz.* ... @$1.60
Reversible Self-Closing:
With Latch ..... *doz.* ... @$1.75
Without Latch ..... *doz.* ... @$1.35
Western:
With Latch ..... *doz.* $1.75
Without Latch ..... *doz.* $1.15
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets,

Nos.	1	2	3
Hinges with Latches	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	1.35

Pivot Hinges

Bommer Bros. Pivot 40%
Lawson Mfg. Co. Matchless 50%

Spring Hinges—

Holdback, Cast Iron .. $6.50@$7.00
Non-Holdback, Cast Iron $6.25@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges 40%
Bardsley's Patent Checking .. 33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor .. 40%
Bommer Spring Hinges 40%
No. 999 Wrot. Steel Hold Back, ℔ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges 25%
Triple End Spring Hinges 50%
Chicago (Ball Bearing) Floor .. 50%
Garden City Engine House 25%
Keene's Saloon Door 25%
Columbian Hardware Co.:
Acme, Wrought Steel 30%
Acme, Brass 25%
American 30%
Columbia, ℔ gr., No. 14, $9.00; " " No. 15, $25.00
Columbia, Adj., No. 7, ℔ gr. $12.00
Columbian Hinges ..... 60&10%
Gem, new list 30%
Clover Leaf ..... ℔ gr. $12.00
Oxford, new list 30%
Floor Spring Hinges ..... 65&10%
Lawson Mfg. Co., Matchless 30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door ..... ℔ gr. $9.00
Chief Ball Bearing Floor Hinge 50%
Ball Bearing Door 25%
No. 777, Sheet Steel Holdb'k. ℔ gr. pr. $9.00
Superior Spring Hinge Co.:
Superior Floor Hinges 33⅓%
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4 ..... ℔ gr. $9.00
New Idea No. 1 ..... ℔ gr. $9.00
New Idea, Double Acting 50%
New Idea Floor 50%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges .. 65%
Heavy Strap Hinges .. 70%
Light T Hinges 60%
Heavy T Hinges 50%
Extra H'y T Hinges .. 66⅔%
Hinge Hasps 15%
Cor. Heavy Strap 70%
Cor. Ex. Heavy T .. 66⅔%
Screw Hook and Strap. 6 to 12 in. lb. 5½¢; 14 to 20 in. lb. 5½¢; 22 to 36 in. lb. 5½¢

Extra 10@10% 10&10%

Screw Hook and Eye:
¾ to 1 inch.....lb. 6½¢
⅝-inch.....lb. 7½¢
½-inch.....lb. 8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
M'f'gr's list, price per gross.

	15	16	17	18	
Inch					10&5%
Galv. Open	$35	$39	$42	$46	
Jap. Open	26	28	31	35	
Galv. Funnel	43	48	52	56	
Jap. Funnel	33	36	39	43	

Masons' Etc.—
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

Hoes— Eye—
Scovil and Oval Pattern.....60&10@60&10&10%
Grub, list Feb. 23, 1899.....70&10@75&10%
D. & H. Scovil.....30%

Handled—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Cronk's Weeding, No. 1, $2.75; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe....10&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....℔ doz. 66⅔%
Junior Size.....℔ doz. $4.00
Ft. Madison Sprouting Hoe..℔ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6½ in.....$3.36
Acme Wedding.....℔ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ℔ doz. $4.85

Hoisting Apparatus—
See *Machines, Hoisting.*

Holders— Bit—
Angular, ℔ doz. $24.00.....45&10%

Door—
Bardsley's, Iron, 40%; Brass and Bronze.....33⅓%
Empire.....50%
Pullman.....35%
Superior.....33⅓%

File and Tool—
Nicholson File Holders and File Handles.....33⅓@40%

Fruit Jar—
Triumph Fruit Jar Holder, ℔ gross, $10.80; ℔ doz.....$1.25

Trace and Rein—
Fernald Double Trace Holder, ℔ doz. pairs.....$1.25
Dash Rein Holder, ℔ doz. pairs..$1.25

Hones—Razor—
Pike Mfg. Co., Belgian, German and Swaty.....50%

Hooks—Cast Iron—
Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....40%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—
Belt.....80%
Wire C. & H. Hooks:.....75&10@75&10&10%
Columbian Hdw. Co., Gem.....70&5%
Parker Wire Goods Co., King..70&10%
Western W. G. Co. Molding.....75%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

Wrought Iron—
Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $1.50.
Cotton.....*doz. $1.05@$1.25*
Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—
Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25
Grass, best, all sizes, per doz.$1.60
Grass, common grades, all sizes, per doz......*$1.30*
Whiffletree.....*lb. 5¾@6¢*
Hooks and Eyes:
Brass.....*60&5@60&10&5%*
Malleable Iron.....*70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $2.25 net
Turner & Stanton Co. Cup and Shoulder.....80&10&10%
Bench hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—
See *Nails, Horse.*

Horseshoes—
See *Shoes, Horses.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition.....*ft. 5 @ 6 ¢*
3-ply Guaranteed..*ft. 8 @ 9 ¢*
4-ply Guaranteed..*ft. 10 @11 ¢*
Cotton Garden, ¾-in., coupled:
Low Grade.....*ft. 8 @ 9 ¢*
Fair Quality.....*ft. 10 @11 ¢*

Irons— Sad—
From 4 to 10.....*lb. 3 @3¼¢*
B. B. Sad Irons.....*lb. 3¼@3½¢*
Mrs. Potts', cents per set:

	Nos. 50	55	60	65
Jap'd Tops	80	77	90	88
Tin'd Tops	85	82	95	92

New England Pressing..*lb. 3¾@4¢*

Pinking—
Pinking Irons.....*doz. 60¢*

Irons, Soldering
See *Coppers.*

Jacks, Wagon—
Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport.....50%
Lane's Steel.....35&10&2%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Kettles—
Brass, Spun, Plain.....*20@25%*
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....60%

Corn—
Wilkinson Shear & Cutlery Co., Wilcut Brand Knives and Hooks.60%
Withington Acme, ℔ doz. $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—
Standard List.....*75&5@75&10%*
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42....75%
Swan's.....70%
Watrous.....16⅔%
L. & I. J. White.....20&5@2%

Hay and Straw—
Serrated Edge, per doz. $5.75@6.00
Iwan's Sickle Edge.....℔ doz. $9.50
Iwan's Serrated.....℔ doz. $10.00

Mincing—
Buffalo.....℔ gro. $13.00

Miscellaneous—
Farriers'.....*doz. $3.00@3.25*
Wostenholm's.....℔ doz. $3.00@3.25

Knobs—
Base, 2½-inch, Birch, or Maple, Rubber Tip.....*gro. $1.25@$1.40*
Carriage, Jap., all sizes.....*gro. 40@45¢*
Door, Mineral.....*doz. 65@70¢*
Door, Por, Jap'd.....*doz. 70@75¢*
Door, Por. Nickel..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

Lacing, Leather—
See *Belting, Leather—*

Ladders, Store, &c.—
Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—
L. & G. Mfg. Co. (low list).....25%
P. S. & W.....40&10%
Reading.....60%

Lanterns—Tubular—
Regular Tubular, No. 0.....*doz. $4.25@4.50*
Lift Tubular, No. 0.....*doz. $4.75@5.00*
Hinge Tubular, No. 0.....*doz. $4.75@5.00*
Other Styles.....*40@45%*

Bull's Eye Police—
No. 1, 2¾-inch.....*$2.75@3.00*
No. 2, 3-inch.....*$3.00@3.25*

Lasts and Stands, Shoe—
Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches— Thumb—
Roggin's Latches, with screw..*doz. 35@40¢*

Door—
Allith Mfg. Co., Automatic, No. 400, ℔ doz.....$4.00
Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.00
Cronk & Carrier Mfg. Co., Latch, Hasp and Staples.....50%
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50
Stowell's Steel.....50%

Leaders, Cattle—
Small.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

Lifters, Transom—
R. & E.....10%

Lines—
Wire Clothes, Nos. 18 19 20
100 feet.....*$2.25 2.00 1.75*
75 feet.....*$1.75 1.55 1.10*
Anniston Waterproof Clothes, 50 ft., ℔ gro., $25.00; Gilt Edge, $23.00; Air Line, $22.00; Acme, $18.00; Alabama, $17.00; Empire, $16.00; Advance, $14.00; Eclipse, $13.50; Chicago, $11.50; Standard, $10.50; Columbia, $9.50; Allston, $13.50; Calhoun, $12.00.
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....℔ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.80; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%

Locks— Cabinet—
Cabinet Locks.....*33⅓%*

Door Locks, Latches, &c.—
NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

Elevator—
Stowell's.....50%

Padlocks—
R. & E. Mfg. Co. Wrought Steel and Brass.....15&10%

Sash, &c.—
Ives' Patent:
Bronze and Brass, 60%; Crescent, 40&20%; Iron, 60%; Window Ventilating, 55%; Robinson Pat. Ventilating Sash Lock, 33⅓%; Wrought Bronze and Brass, 55%; Wrought Steel, 55%.
Pullman Patent Ventilating Lock..35%
Reading.....40%

Machines—Boring—
Com. Upr't, without Augers, *$2.00@2.25*
Com. Angl'r, without Augers, *$2.25@2.50*
Swan's Improved.....40&10%
Jennings', Nos. 1 and 4.....33⅓%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

Corking—
Reisinger Invincible Hand Power.....℔ doz. $18.00

Fence—
Williams' Fence Machines....each, $5.50

Hoisting—
Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

Ice Cutting—
Chandler's.....12½%

Washing
Boss Washing Machine Co.: Per doz.
Boss No. 1.....$57.00
Boss Rotary.....$57.00
Champion Rotary Banner No. 1.$57.00
Standard Champion No. 1.....$50.00
Standard Perfection.....$27.00
Cincinnati Square Wester.....$33.00
Uneeda American, Round.....$33.60

Mallets—
Hickory.....*45&5@50%*
Lignumvitæ.....*45&5@50%*
Tinners' Hickory and Applewood.....*doz. 45&5@50%*

Mangers, Stable—
Swett Iron Works.....50%

Mashers, Vegetable—
Western, W. G. Co., Potato....60&10%

Mats, Door—
Elastic Steel (W. G. Co.), new list.50%
Keystone Wire Matting Co.:
Keystone.....50%
Ideal.....50%

Mattocks—
See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—
Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria..50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.....30%

Motors Water—
Divine's Red Devil.....30%

Mowers, Lawn—
NOTE.—Net prices are generally quoted
Cheapest.....*all sizes, $1.85@2.00*
Cheap.....*all sizes, $2.00@2.50*
Better Grade..*all sizes, $2.50@4.50*

	12	14	16	18-in.
High Grade	$4.50	4.75	5.00	5.25

Continental.....60&5%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr., Ball Bearing....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70&10&10%
Style B, Low Wheel.....70&10%
Style C, High Wheel.....70&10%
Style D, High Wheel.....70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%

Nails—
Wire Nails and Brads, Miscellaneous.....*85&10@85&10&5%*
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...40&5%
Champlain	28	26	25	24	23	.....50%
Coleman	15	12	12	11	11	.....net
New Haven	23	21	20	19	18	...40&5%
Livingston	19	18	17	16	16	.....10%

Western.....℔ lb. 5½¢
Jobbers' Special Brands.....*per lb. 9@10¢*

Picture—

	1½	2	2½	3	in.
Brass H'd	.55	.55	.60	.70	.. *gro*
Por. Head	.. 1.10	1.10	1.10		.. *gro*

Nippers—
See *Pliers and Nippers.*

Nuts—
Cold Punched: *Off list.*
Square, Blank or Tapped..*4.80¢*
Hexagon, Blank or Tapped..*5.10¢*
Square, B'k, C., T. & R....*5.10¢*
Hexagon, B'k, C., T. & R..*5.70¢*
Hot Pressed:
Square, Blank.....*5.00¢*
Hexagon, Blank.....*5.40¢*
Square, Tapped.....*4.70¢*
Hexagon, Tapped.....*5.10¢*

Oakum—
Best.....*lb., 6½¢*
U. S. Navy.....*lb., 6¢*
Navy.....*lb., 5¢*
Plumbers' Spun Oakum.....*8½¢*
In carload lots ½¢ lb. off, f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—
Brass and Copper.....*50&10%*
Tin or Steel.....*65&10&5@70%*
Zinc.....*65&10&5@70%*
Chase or Paragon:
Brass and Copper.....*50&10%*
Tin or Steel.....*65&10%*
Zinc.....*65&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can— *Per doz.*
Sprague, Iron Handle...*.30@35¢*
Sprague, Wood Handle...*35@40¢*
Sardine Scissors.....*$1.75@$3.00*
Vim Tin Shear and Can Opener, ℔ doz., 75c.; per gro., $7.50
Yankee Can and Bottle Opener, ℔ doz., net.....$0.75

Egg—
Nickel Plate, ℔ doz., $2.00; Silver Plate, $4.00.

Packing—
Asbestos Packing, Wick and Rope.....*17@22¢*

Rubber—
(*Fair quality goods.*)
Sheet, C. I.....*11@12¢*
Sheet, C. O. S.....*11@12¢*
Sheet, C. B. S.....*12@13¢*
Sheet, Pure Gum.....*40@45¢*
Sheet, Red.....*40@50¢*
Jenkins' '96, ℔ lb. 80¢.....25%

Miscellaneous—
American Packing...*lb. 7@10 ¢*
Cotton Packing.....*lb. 16@25 ¢*
Italian Packing.....*lb. 9@12½¢*
Jute.....*lb. 4@ 4½¢*
Russia Packing.....*lb. 8@11 ¢*

Pails, Creamery—
R. M. Co., with gauges, ℔ doz., No. 1, $6.25; No. 2, $6.50.

Pails, Water, Well, &c.—
See *Buckets.*

Pans— Dripping—
Standard List.....*65&7½%*
Edwards, Royal Blue.....65&7½%

Fry—
Common Lipped:

Nos.	1	2	3	4	5
Per doz	$0.75	0.80	0.90	1.10	1.30

Refrigerator, Galva.—

Inch	12	14	16	18
Per doz	$1.75	2.25	2.80	3.15

Roasting and Baking—
Regal, R. M. Co., ℔ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory, ℔ doz., net, Nos. 200, $0.00; 400, $15.00.
Simplex, ℔ gro.:

No.	40	50	60	140	150	160
	$30.00	35.00	42.00	34.00	39.00	46.00

Paper—Building Paper
Asbestos: lb.
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.3½to5¢
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....*6¢*
Mill Board, Sheet, 40 x 40 in.:
1-32 to ½ in.....*3@5¢*
Per roll
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll *40@50¢*
Medium weight, 30 lbs. to roll, *50@55¢*
Heavy weight, 40 lbs. to roll..*65@70¢*
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....*$50.00*
Red Rope Roofing, 250 sq. ft. per roll.....*$1.75*

Tarred Paper—
1 ply (roll 400 sq. ft.), ton.... *$31.00@$35.00*
2 ply, roll 108 sq. ft.....*87¢*
3 ply, roll 108 sq. ft.....*80¢*
Slater's Felt (roll 500 sq. ft.).76¢

Sand and Emery—
Flint Paper and Cloth.50&10@—%
Garnet Paper and Cloth....*25%*
Emery Paper and Cl'h..50&10@60%

Parers— Apple—
Advance.....℔ doz. $4.00
Baldwin.....℔ doz. $4.00
Bonanza Improved.....each $6.50
Daisy.....℔ doz. $4.00
Dandy.....each $7.50
Eureka Improved.....each $20.00
Family Bay State.....℔ doz. $15.00
Improved Bay State.....℔ doz. $36.00
Little Star.....℔ doz. $5.00
New Lightning.....℔ doz. $7.00
Reading 72.....℔ doz. $3.25
Reading 78.....℔ doz. $6.25
Rocking Table.....℔ doz. $4.20
Turn Table '98.....℔ doz. $4.00
White Mountain.....℔ doz. $5.00

Potato—
Saratoga ..... ℔ doz. $7.00
White Mountain ..... ℔ doz. $6.00

Picks and Mattocks—
List, Feb. 23, 1899.....70&10@75%
Cronk's Handled Garden Mattock, ℔ doz., No. 2, $2.60; No. 3, $5.40.

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass .....50&10@60%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—
Carload lots.
*Standard, 2-6 in.*50&10@50&10&5%
Extra Heavy, 2-6 in.....65&10%
Fittings .....70&10@70&10&5%

Pipe, Merchant—
Consumers, Carloads.

	Steel. Plk.	Galv.	Iron. Blk.	Galv.
	%	%	%	%
⅛ & ¼ in.	67	51	64.5	48.5
⅜ in.	69	55	64.5	56.5
½ in.	71	59	72.5	62.5
¾ to 6 in.	75	65	72.5	62.5
7 to 12 in.	70	55	68	53

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:
First-class .....85@86%
Second-class 90%
NOTE.—Market irregular.

Pipe, Stove—
Per 100 joints.

	C. L.	L. C. L.
Edwards' Nested:		
5 in., Standard Blue	$6.25	$7.25
6 in., Standard Blue	6.75	7.75
7 in., Standard Blue	7.75	8.75
5 in., Royal Blue	7.00	8.00
6 in., Royal Blue	7.50	8.50
7 in., Royal Blue	8.50	9.50

Planes and Plane Irons—
Wood Planes—
Bench, first qual.....30@30&10%
Bench, second qual...40@40&10%
Molding .....25@25&10%
Bailey's (Stanley R. & L. Co.)..35&2½%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union 60%

Iron Planes—
Bailey's (Stanley R. & L. Co.)....35%
Chapin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....30&5%
Union 60%

Plane Irons—
Wood Bench Plane Irons, list Dec. 12, '06.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Stanley R. & L. Co.....30%
Union 50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse.....℔ doz. $8.00

Plates—
Felloe .....*lb. 4@4¼¢*
Self-Sealing Pie Plates (R. M. Co.), ℔ doz. $2.00.....50%

Pliers and Nippers—
Button Pliers....75&10@75, 10, 5%
Gas Burner, per doz., 6 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.

Gas Pipe..	7	8.	10	12-in.
	$2.00	$2.25	$2.75	$3.50

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's 60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
The Nettleton Mfg. Co. Reversible Cutting Nippers.....40%
P., S. & W. Tinners' Cutting Nippers 40%
Wm. Schollhorn Co.:
Bernard, 33⅓%; Elm City, 33⅓%; Paragon, 50%; Lodi, 50%.
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&5%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10&5%
Extension Sights.....30@30&10&5%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....6%&10%
Disston's Pocket Levels.....60&10%
C. E. Jennings & Co.'s Iron....33⅓%
C. E. Jennings & Co.'s Iron, Adjustable .....40&7½%
Stanley R. & L. Co.....40%
Stanley's Duplex.....35%
Woods' Extension.....33⅓%

Poachers, Egg—
Buffalo Steam Egg Poachers, ℔ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Points, Glaziers'—
Bulk and 1-lb. papers.....*lb. 7¢*
½-lb. papers.....*lb. 9@10½¢*
¼-lb. papers.....*lb. 9½@11¢*

Pokes, Animal—
Ft. Madison Hawkeye.....℔ doz. $3.25
Ft. Madison Western.....℔ doz. $4.00

Police Goods—
Manufacturers' Lists...25@25&5%
Tower's 25%

Polish—Metal, Etc—
Glasbrite, No. 2, 5 lb can (powder), each, $1.25; ℔ doz., $12.00; No. 2, 10 lb can (cake), each, $2.50; ℔ doz., $24.00.
Prestoline Liquid, No. 1 (½ pt.). ℔ doz., $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

Stove—
Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon's, ℔ gr. $5.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside .....℔ gr. $2.50
Gem, ℔ gr. $4.50.....10%
Japanese .....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50
Wynn's Black Silk:
Paste, cans, ℔ doz., 5 oz., $0.75; ½ lb, $1.00; 1 lb.....$1.75
Paste, ℔ 5 lb can.....$0.70
Liquid, cans, ℔ doz., 6 oz., $0.75; ½ pt., $1.00; 1 pt.....$1.75
Steel Range Enamel, ℔ doz., ¼ pt., $1.00; ½ pt., $1.25.

Poppers, Corn—
1 qt. Square..doz.$0.80; gro.$8.00
1 qt. Round..doz.$0.90; gro.$9.00
1½ qt. Square.doz.$1.00; gro.$10.00
2 qt. Square..doz.$1.20; gro.$12.00

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled .....35&10%
Tinned .....30&10%

Powder—
In Canisters:
Duck, 1 lb.....*each 45¢*
Fine Sporting, 1 lb....*each 75¢*
Rifle, ½-lb.....*each 15¢*
Rifle, 1-lb.....*each 25¢*
In Kegs:
12½-lb. kegs.....*$3.50*
25-lb. kegs.....*$4.50*
King's Semi-Smokeless:

	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	8.75

Robin Hood Sm'less Shot Gun..50&20%

Presses—
Fruit and Jelly—
Enterprise Mfg. Co.....20@25%
Seal Presses—
Morrill's No. 1, ℔ doz., $20.00.....50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Nail—
Cyclops 50%
Miller's Falls, No. 3, ℔ doz., $12.00..33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, case lots, ℔ doz., Large, $9.00; Small, $7.50.
Giant No. 1, ℔ doz., $18; No. 1½, $16.50; No. 3, $15.....33⅓%
Staple Pullers, Utica and Davison 60%
Parrot Tack and Stub Puller, ℔ doz., 75c.: ℔ gro., $6.00

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.50	.55	.60	1.05

Hay Fork, Swivel or Solid Eye. doz., 4 in., $1.25; 5 in., $1.55

Inch	2	2¼	2½
Hot House, doz.	$0.65	.85	1.20

Inch	1¼	1½	1¾	2
Screw, doz.	$0.16	.19	.23	.30

Inch	1¾	2	2¼	2½
Side, doz.	$0.25	.40	.55	.60

Inch	1½	1¾	2	2½
Stowell's:				
Ceiling or End, Anti-Friction	60&10%			
Dumb Waiter, Anti-Friction	60&10%			
Electric Light	60%			
Side, Anti-Friction	60&13%			

Sash Pulleys—
Common Frame; Square or Round End, per doz, 1¾ and 2 in.....*16@19¢*
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in....*17@19¢*
Acme.....1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Ideal .....70&5%
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—
Cistern 60%
Pitcher Spout.....75&5@75&10%
Wood Pumps, Tubing, &c..45@50%
Barnes Dbl. Acting (low list).....50%
Barnes Pitcher Spout.....70&10%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $6.50
Flint & Walling's Fast Mail Hand, (low list).....55%
Flint & Walling's Fast Mail (low list) 55%
Flint & Walling's Tight Top Pitcher. 75&10&5%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50%

Pump Leathers—
Plunger and Lower Valve—Per gro.:

Inch...	2	2¼	2½	2¾
	$2.20	2.50	2.75	3.00

Inch...	3	3¼	3½	3¾	4
	$3.30	3.60	3.85	4.10	4.40

Plunger Cup Leathers—Per 100:

Inch...	2½	3	3½	4
	$2.75	3.85	5.00	6.00

Punches—
Saddlers' or Drive, good..... *doz. 50@75¢*
Spring, single tube, good quality .....*$1.75@2.00*
Revolving (4 tubes)..... *doz. $3.50@3.75*
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, $15.00 .....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Wm. Schollhorn Co.:
Belt and Ticket, Bernard, 33⅓%; Paragon, 50%; Lodi.....50%
Tinners' Hollow, P., S. & W. Co.33⅓%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....50%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron.... *2½@2¾¢*
Sliding Door, Wrought Brass, 1½ in., lb., 36¢.....30%
Allith Mfg. Co.: Reliable Hanger Track 50%
Cronk's:
Double Braced Steel Rail..℔ ft. 3¼¢
O. N. T. Rail..... 3 ¢
Hinge Rail.....396¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.80.
Lane's:
Hinged Track, ℔ 100 ft., 1 in., $3.40; 1¼ in., $3.96.
O. N. T., ℔ 100 ft., 1 in., $3.00; 1¼ in., $3.60; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
℔ 100 ft. No. 201, $4.00; No. 202, $4.00
New York, 1 x 3-16 in., ℔ 100 ft. $3.00
McKinney's:
Hinged Hanger Rail, ℔ ft., 11¢..50%
None Better.....℔ ft. 3¾¢
Standard .....℔ ft. 6 ¢
Myers' Stayon Track.....60&10%
Richards' Mfg. Co.:
Common, 1 x 3-6 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.
Stowell's:
Cast Rail.....℔ ft. 2¼¢
Steel Rail, Plain.....2¾
Wrought Bracket, 1 3-16 in....℔ ft. 3¢
Wrought Bracket, 1½ x 5-16..℔ ft. 7¢
Swett's Hylo, ℔ ft. 11¢.....60%
P. L. B. Steel Rail.....℔ 100 ft. $3.00
No. 0, 1 x 3-16.....℔ 100 ft. $3.00

Rakes—
NOTE.—Many goods are sold at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, ℔ doz., net.....$4.25
Cronk's:
New Champion Garden, ℔ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..75%
Victor Garden, ℔ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00.....8⅓%
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ℔ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Lawn Queen, 20-tooth....℔ doz. $2.90
Lawn Queen, 24-tooth....℔ doz. $3.00
Paragon, 20-tooth.....℔ doz. $2.70
Paragon, 24-tooth.....℔ doz. $2.75
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

Rasps, Horse—
Disston's 75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
New Nicholson.....70&10@75%
See also Files.

Razors—
Liana Bo-ras-le.....60%
Fox Razors, ℔ doz., No. 42, $30.00; No. 44, $20.00; No. 82, Platina, $25.00. } 50%
Red Devil.....50%
Silberstein:
Carbo Magnetic, $21.00; Griffon, No. 65, $13.50; Griffon, No. 00, $12.00; all other Razors, 40%.

Safety Razors—
Kampfe Bros.:
Star Safety, 25%; Star Interchangeable, 25%; Star Safety Corn, 25%.
Silberstein 40%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P, 33¼%; 2904 PN, 33¼%; 0924 N, 33¼%; 02084 N, 33⅓%; 002904 PN, 33⅓%; 802 N, 33⅓%.....20%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed .....66⅔%@66⅔&10%
White Porcelain Enamel....60%
Solid Brass or Bronze Metal, 40&10%

Revolvers—
Single Action.....95¢@$1.00
Double Action, except 44 cal.$1.85
Double Action, 44 caliber....$2.00
Automatic $3.25
Hammerless $3.75

Riddles, Hardware Grade
16 in.....*per doz.$2.50@$2.75*
17 in.....*per doz.$2.75@$3.00*
18 in.....*per doz.$3.00@$3.25*

Rings and Ringers—
Bull Rings—

	2	2½	3 inch.
Steel	$0.70	0.75	0.80 doz.
Copper	$1.00	1.15	1.40 doz.

Rea's Improved Self-Piercing, ℔ doz., Copper, 2 in., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—
Hill's Rings, gro. boxes.$4.00@4.50
Hill's Ringers, Gray Iron..... *doz. 50@55¢*
Hill's Ringers, Malleable Iron.. *doz. 70@75¢*
Blair's Rings...*per gro.$4.75@5.25*
Blair's Ringers.per doz.$0.60@ .65
Brown's Rings..*per gro.$5.00@5.50*
Brown's Ringers.per doz.$0.60@ .65

Rivets and Burrs—
Copper 33⅓%
Carriage, Coopers', Tinners, &c.: Black .....70&10%
Metallic Tinned.....70%

Bifurcated and Tubular—
Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 23@25¢; Tin boxes, 29@32¢.
Tubular, per doz. boxes, 50 count, 22¢; 100 count, 51@58¢.

Rollers—
Acme, Stowell's Anti-Friction.....50%
Cronk's Stay No. 65, $0.90; No. 50 .....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56.....$0.84
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%
Stowell's Barn Door Stay..℔ doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay.....℔ doz. 65¢
Hinge Adjustable Stay.....℔ doz. 90¢

Rope—
Manila, 7-16 in. diam. and larger: Pure .....*lb., 12½@13¢*
Sisal, 7-16 in. diam. and larger: Pure .....*lb., 9¼¢*
Sisal, 7-16 in. diam. and larger: No. 2 quality.....*lb., 7¾@8¢*
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse Mixed .....*lb., 7¾@8¢*
Pure .....*lb., 9¼¢*
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred: Mixed .....*lb., 7@7½¢*
Pure .....*lb., 8¢*
Cotton Rope: Best, ¼-in. and larger...17@18¢
Medium, ¼-in. and larger.16@.17¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope: Thread, No. 1, ¼-in. & up, lb...9¢
Thread, No. 2, ¼-in. & up, lb...8½¢
Old Colony Manila Transmission Rope .....℔ lb 17½¢

Wire Rope—
Galvanized .....87½&2½%
Plain .....45&2½%

Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

Rules
Boxwood .....60@60&10%
Ivory .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood 60%
Flexifold .....37½&10&10%
Ivory .....35@35&10&10%
Miscellaneous .....50@50&10&10%
Stephens' Combination.....55@55&10%
Stationers' .....10@10&10%

Keuffel & Esser Co.:
Folding, Wood....35&10%
Folding, Steel....33⅓&10%
Lufkin's Steel....50&10%
Lufkin's Lumber....60%
Stanley R. & L. Co.:
Boxwood....60%
Ivory....45%
Miscellaneous....60%
Zig Zag....45%
Zig Zag, Pin Joint....42½%
Upson Nut Co.:
Boxwood....60@60&10%
Ivory....35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—
See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—
Atkins':
Circular....50%
Band....50&10@60%
Butcher Saws....50
Cross Cuts....35
One-Man Cross Cut....40
Narrow Cross Cut....50
Hand, Rip and Panel....35&5
Miter Box and Compass....40
Mulay, Mill and Drag....50%
Chapin-Stephens Co.:
Turning Saws and Blades....30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth....50%
Band, 2 to 18 in. wide....60
Band, ¼ to 1⅜....60
Crosscuts....45
Narrow Crosscuts....50
Mulay, Mill and Drag....50
Framed Woodsaws....25
Woodsaw Blades....25
Woodsaw Rods, Tinned....15
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8....25%
Hand Saws, Nos. 7, 107, 10⅞, 3, 1, 0, 00, Combination....30
Compass, Key Hole, &c....25
Butcher Saws and Blades....30%
C. E. Jennings & Co.'s:
Back Saws....25%
Butcher Saws....30
Compass and Key Hole Saws....35&5
Framed Wood Saws....30
Hand Saws....20&2½
Wood Saw Blades....35%
Millers Falls:
Butcher Saws....15&10%
Star Saw Blades....15&10%
Massachusetts Saw Works:
Victor Kitchen Saws....40&10&50%
Butcher Saws Blades....35@40%
Peace & Richardson's Hand Saws....30%
Simonds':
Circular Saws....45%
Crescent Ground Cross Cut Saws....30
One-Man Cross Cuts....40&10%
Gang Mill, Mulay and Drag Saws....45%
Band Saws....50
Back Saws....25@25&7½%
Butcher Saws....35@35&7½%
Hand Saws....25@25&7½%
Hand Saws, Bay State Brand....40%
Compass, Key Hole, &c....25@25&7½%
Wood Saws....40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws....50%

Hack Saw Blades and Frames—
Atkins' Hack Saw Blades A A A...25%
Disston's:
Concave Blades....25%
Keystone Blades....35
Hack Saw Frames....30%
Simonds File Co....35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180....40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades....40&10%
Griffin's Hack Saw Frames....35&5&10%
Griffin's Hack Saw Blades....35&5&10%
Star Hack Saws and Blades....15&10%
Sterling Hack Saw Blades....30&10&5%
Sterling Hack Saw Frames....30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00....10%
Victor Hack Saw Blades....25%
Victor Hack Saw Frames....40%

Scroll—
Barnes, No. 7, $15....25%
Barnes' Scroll Saw Blades....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20....20%
Lester, complete, $10.00....15&10%
Rogers, complete, $3.50 and $4.00....15&10%

Scales—
Family, Turnbull's....50@50&10%
Counter:
Hatch, Platform, ½ oz. to 4 lbs....doz. $5.50
Two Platforms, ½ oz. to 8 lbs....doz. $18.00
Union Platform, Plain $1.70@1.90
Union Platform, Stpd. $1.85@2.15
Chatillon's:
Eureka....25%
Favorite....40%
Crocers' Trip Scales....60%
Chicago Scale Co.:
The Little Detective....25 lbs 50%
Union or Family No. 2....60%
Portable Platform (reduced list)....50%
Wagon or Stock (reduced list)....25@25%
The Standard Portables....45%
The Standard R. R. and Wagon....50&10%

Scrapers—
Box, 1 Handle....doz. $2.00@2.25
Box, 2 Handle....doz. $3.50@3.60
Ship....Light, $2.00; Heavy, $4.50
Adjustable Box Scraper (S. B. & L. Co.), $6.00....40%
Chapin-Stephens Co., Box....30@30&10%

Screws—Bench and Hand
Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75
Bench, Wood....20@20&10%
Hand, Wood....20@20&10%
R. Bliss Mfg. Co., Hand....20&5@20&10%
Chapin-Stephens Co., Hand....20%

Coach, Lag and Hand Rail—
Lag, Cone Point, list Oct. 1, '99....75&15%
Coach, Gimlet Point, list Oct. 1, '99....75&10%
Hand Rail, list Jan. 1, '81....70&10@75%

Jack Screws—
Standard List....75%
Millers Falls....50&10&10%
P., S. & W....50%
Swett Iron Works....75@80%

Machine—
List Jan. 1, '98:
Flat or Round Head, Iron....50@50&10%
Flat or Round Head, Brass....50@50&10%

Set and Cap—
Set (Iron)....75&10&7½%
Set (Steel), net advance over Iron....25%
Sq. Hd. Cap....&10&7½%
Hex. Hd. Cap....70&10&7½%
Rd. Hd. Cap....50&7½%
Fillister Hd. Cap....60&7½%

Wood—
List July 23, 1903.
Flat Head, Iron....87½&10@...%
Round Head, Iron...85 &10@...%
Flat Head, Brass....82½&10%
Round Head, Brass..80 &10@...%
Flat Head, Bronze...77½&10@...%
Round Head, Bronze..75 &10@...%
Drive Screws....87½&10%

Scroll Saws—
See *Saws, Scroll.*

Scythes—
Per doz.
Grass, No. 1, Plain....$6.25@6.75
Clipper, Bronzed Webb..$6.50@7.00
No. 3 Clipper, Pol'd Webb..$6.75@7.25
No. 6 Clipper and Solid Steel..$7.00@7.50
Bush, Weed and Bramble, No. 2..$6.50@7.00
Grain, No. 1....$8.25@8.75
Bronzed Webb, No. 1..$8.50@9.00
Nos. 3 and 4 Clipper, Grain..$8.75@9.25
Solid Steel, No. 6....$9.25@9.75

Seeders, Raisin—
Enterprise....25@30%

Sets—Awl and Tool—
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $13; 3, $12; 4, $9; 5, $7....50%
C. E. Jennings & Co.'s Model Tool Holders....30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18....15&10%

Garden Tool Sets—
Ft. Madison Three Plows, Hoe, Rake and Shovel....℔ doz sets $5.00

Sets, Nail—
Octagon....gro. $3.50@3.75
Buck Bros....27½%
Cannon's Diamond Point, ℔ gro. $12.40
Mayhew's....℔ gro. $9.50
Snell's Cor'gated, Cup Pt....℔ gro. $7.20
Snell's Knurled, Cup Pt....℔ gro. $7.20
Victor Knurled Cup Pt....℔ gro. $7.50

Rivet—
Regular list....75@75&10%

Saw—
Atkin's:
Criterion....40%
Adjustable....40%
Disston's Star, Monarch and Triumph....30%
Morrill's No. 1....$15.00
Nos. 3 and 4, Cross Cut....$20.60
No. 5, Mill....$30.00
Nos. 10, 11, 95....$15.60
No. 1 Old Style....$10.00
Special....$16.25
Giant Royal Cross Cut....℔ doz. $8.00
Royal, Hand....℔ doz. $4.50
Taintor Positive....℔ doz. $3.75

Shaving—
Fox Shaving Sets, No. 30....℔ doz., net, $24.00
Smith & Hemenway Co.'s....40%

Sharpeners, Knife—
Chicago Wheel & Mfg. Co....70%
Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz....$1.50
Mounted Kitchen Sand Stone, ℔ doz....$1.50
Natural Grit Carving Knife Hones, ℔ doz....$3.00
Quick Cut Emery Carving Knife Hones, ℔ doz....$1.50
Quick Edge Pocket Knife Hones, ℔ doz....$2.00
(Pike Mfg. Co. entries: 50 & 60)

Skate—
Smith & Hemenway Co., Eureka..20%

Shaves, Spoke—
Iron....doz. $1.10@1.25
Wood....doz. $1.75@2.25
Bailey's (Stanley R. & L. Co.)....45%
Razor Edge (Stanley R. & L. Co.), Iron, 50%; Wood....58%
Chapin-Stephens Co....30@30&10&10%
Goodell's, ℔ doz. $9.00....15&10%
Wood's F1 and F2....50%

Shears—
Cast Iron..	*7*	*8*	*9 in.*	
Best	*$16.00*	*18.00*	*20.00*	*gro.*
Good	*$13.00*	*15.00*	*17.00*	*gro.*
Cheap	*$5.00*	*6.00*	*7.00*	*gro.*

Straight Trimmers, &c.:
Best quality Jap....70@70&10%
Best quality, Nickel..60@60&10%
Fair quality, Jap....80@80&5%
Fair quality, Nickel..75@75&10%
Tailors' Shears....40@40&10%
Acme Cast Shears....40@40&5%
Heinisch's Tailor's Shears....10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list....30&10&5%
Grass....50&10%
Horse or Mule....50&10%

Tinners' Snips—
Steel Blades....80&5@20&10%
Steel Laid Blades....40&10@50%
Forged Handles, Steel Blades, Berlin....50%
Heinisch's Snips....40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 in....50%
Niagara Snips....40%
P., S. & W. Forged Handles....20%

Pruning Shears—
Cronk's Hand Shears....33⅓%
Cronk's Wood Handle Shears....33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00....25%
Disston's Pruning Hook only, ℔ doz. $12.00....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades....50%
P., S. & W. Co....30%
Wilkinson Shear & Cutlery Co.:
Hedge, Wilcut Brand....60&10%
Lawn and Border, Wilcut Brand....60&10%

Sheaves—Sliding Door—
Stowell's Anti-Friction....50%
Reading....40%
R. & E. list....15%
Wrightsville Hatfield Pattern....80%

Sliding Shutter—
Reading list....40%
R. & E. list....10%

Shells—Shells, Empty—
Brass Shells, Empty:
Climax, 10 and 12 gauge....65&10%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union, League, 12 and 12 gauge; Rival Grade....25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge....20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..20%
Expert, 10, 12, 16 and 20 gauge, 33⅓&5%
Robin Hood, Low Brass....20&5%
Robin Hood, High Brass....30&5%
Indian, for Black Powder....25&5%

Shells, Loaded—
Loaded with Black Powder..40%
Loaded with Smokeless Powder, medium grade....40&5%
Loaded with Smokeless Powder, high grade....40&10&10%
Robin Hood:
Smokeless Robin Hood, Low Brass....50%
Smokeless Comets, High Brass, 50&10&5%
Indian, Black Powder....40&5%
Winchester:
Smokeless Repeater Grade....40&5%
Smokeless Leader Grade...40&10&10%
Black Powder....40%

Shingles, Metal—Per Sq.
Edwards Mfg. Co.:	Painted.	Galv.
14 x 20	$4.25	$5.00
10 x 14	4.50	6.25
7 x 10	4.75	6.50

Wheeling Corrugating Co.:

	Tin Painted.	Galv.
Dixie, 14 x 20 in.	$4.25	$5.50
Dixie, 10 x 14 in.	4.80	6.00
Dixie, 7 x 10 in.	5.00	6.75

Shoes, Horse, Mule, &c.—
F.o.b. Pittsburgh:
Iron....per keg $4.10
Steel....per keg $3.85
Burden's, all sizes....℔ keg $3.90

Shot—
25-lb. bag.
Drop, up to B....$1.90
Drop, B and larger....2.15
Buck....2.15
Chilled....2.15
Dust....2.35

Shovels and Spades—
Association List, Nov. 15, 1902..40%

Snow Shovels—
Long Handle....$2.75@$3.00
Wood and Mall. D. Handle. $3.25@$3.50

Sieves and Sifters—
Hunter's Imitation....gro. $9.50@10.00
Hunter's Genuine....per gro. $12.00@13.50
Buffalo Metallic Blued, R. M. Co., ℔ gr.

14&16	16&18	18&20
$13.20	$13.50	$14.40

Sieves, Seamless Metallic
—Per dozen.—

Mesh	*14*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—
Nested, 10, 11 and 12 Inch.
Mesh 18, Nested....doz. $0.90@0.95
Mesh 20, Nested....doz. $1.00@1.05
Mesh 24, Nested....doz. $1.30@1.40

Sinks, Cast Iron—
Painted, Standard list:
12 x 12 to 22 x 36 in....60%
20 x 40 to 24 x 50 in....50%
24 x 60 to 24 x 120 in....30%
Barnes' low list:
Up to and including 20 x 36 in. 50&5%
20 x 40 to 24 x 50 in....50%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—
Cast Iron....70@75&10%
Steel....40@45%

Slates, School—
Factory Shipments.
"D" Slates....50@50&10%
Eureka, Unexcelled Noiseless..60&5 tens
Victor A, Noiseless..60&4 tens &5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—
German....40@40&10%
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
High Grade, 40%; Trojan....40%
Jockey....25%
Oneida Community:
Harness Snaps, 1 inch....60&5%
Swivel Snaps....60
Swivels....50%

Snaths—
Scythe....50%

Snips, Tinners—See *Shears*

Spoons and Forks—
Silver Plated—
Good Quality....50&10@60&5%
Cheap....60@60&10%
International Silver Co.:
1847 Rogers Bros., 40&10%; Rogers & Hamilton....50&10%
Rogers & Bro., William Rogers' Eagle Brand....50&10%
Anchor, Rogers Brand....60%
Wm. Rogers & Son....60&10%

Miscellaneous—
German Silver....60@60&5%
Cattaraugus Cutlery Co.:
Seneca Silver....50%

Tinned Iron—
Teas....per gro. 45@50¢
Tables....per gro. $0.50@$1.00

Springs—Door—
Bardsley's Spring and Check....40%
Chicago (Coil)....40&10
Gem (Coil)....20
Pullman (Coil)....35%
Reliance (Coil)....40&10%
Star (Coil)....30%
Torrey's Rod, 39 in....℔ doz. $1.10

Carriage, Wagon, &c.—
1¼ in. and Wider: *Per lb*
Black....4@4¼¢
Half Bright....4@4¼¢
Bright....4½@4¾¢
Painted Seat Springs:
1½ x 2 x 26....per pr. 42¢
1¼ x 3 x 28....per pr. 70¢

Sprinklers, Lawn—
Enterprise....25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20....30%
Pfeuger & Henger Mfg. Co.:
Cactus, 65&5%; Japanese, 70&5%; Nationals, 60&5%.

Squares—
Nickel plated.. } *List Jan. 5, 1900.*
Steel and Iron. } *75@—%*
Rosewood Hdl. Try Square and T-Bevels....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels....40&10@40&10&10%
Disston's Try Squares and Bevels, Rosewood Handle, 60&10%; Iron Stock and Bevel....15%
Winterbottom's Try and Miter, No. 1, 35%; No. 2....45%

Squeezers, Lemon
Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap....doz. $1.00
Good Grade....doz. $1.25
Tinned Iron....doz. $0.75@1.25
Iron, Porcelain Lined...doz. $1.75

Staples—
Barbed Blind....lb. 6@6½¢
Electricians', Association list..80&10&10&10%
Fence Staples, Plain, $2.25; Galvanized....$2.55
Poultry Netting Staples....per lb. 3¼@3½¢

Steels, Butchers'—
Dick's....30%
Foster Bros.....30
C. & A. Hoffmann's....40

Steelyards—....30@50&10%

Stocks and Dies—
Blacksmiths'....50@50&10%
Curtis Rev'ble Ratchet Die Stock...25%
Derby Screw Plates....25
Green River....25
Lightning Screw Plate....25%
Little Giant....25
Reece's New Screw Plates....25%

Stoners, Cherry—
Enterprise....25@30%

Stones—Oil, &c.
Chicago Wheel & Mfg. Co., 1901 list:
Gem Oil, Double Grit....65%
Gem Axe, Single or Double Grit....65%
Gem Slips....65%
Gem Razor Hones....50%
Pike Mfg. Co., 1904 list: (80 lb.)
Arkansas St. No. 1, 3 to 5½ in....$2.60
Arkansas St. No. 1, 5½ to 8 in....$3.50
Arkansas Slips No. 1....$1.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 30¢
Lily White Slips....90¢
Rosy Red Slips....90¢
Washita Slips, Extra....80¢
Washita Slips, No. 1....70¢
Washita Slips, No. 2....40¢
India GO Stones (entire list)....33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit....33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit....33⅓%
Quickcut Emery Rubbing Bricks....33⅓%
Hindostan No. 1, R'g'lar. (80 lb.) 8¢
Hindostan No. 1, Small...(80 lb.) 10¢
Axe Stones (all kinds)....
Turkey Oil Stones, Extra, 5 to 8 in....(80 lb.) 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips....40¢
Sand Stone....8¢

Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem, ₱ gro., 10 in., $8.00; 12 in., $10.80.
Norton Alundum Scythe Stones:
Less than 10 gross lots... ₱ gro. $6.00
Lots of 10 gross or more... ₱ gro. $4.50
Pike Mfg. Co., 1901 list:
Black Diamond S. S.. ₱ gro. $12.00
Lamoille S. S..... ₱ gro. $11.00
White Mountain S. S. ₱ gro. $9.00
Green Mountain S. S.. ₱ gro. $6.00
Extra Indian Pond S. S. ₱ gro. $7.50
No. 1 Indian Pond S. S. ₱ gro. $7.00
No. 2 Indian Pond S. S. ₱ gro. $4.50
Leader Red End S. S. ₱ gro. $4.50
Quick Cut Emery.... ₱ gro. $10.00
Pure Corundum,..... ₱ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers..... ₱ gro. $9.00

Stops— Bench—

Millers Falls.....15&10%
Morrill's, ₱ doz., No. 1, $10.00.....50%
Morrill's, No. 2, $12.50.....50%

Door—

Chapin-Stephens Co.....60@60&10%

Plane—

Chapin-Stephens Co.....30%

Straps— Box—

Cary's Universal, case lots....20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 60@60&10%
Socket ..... doz. $1.60
Bullard, ₱ doz.....$4.00
Excelsior Stretcher and Tack Hammer Combined, ₱ doz. $6.00.....20%

Strops, Razor—

Star Diagonal Strop.....25%

Stuffers, Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Co., list Jan. 1, 1902 .....30&5%

Sweepers, Carpet—

National Sweeper Co.: ₱ doz.
Louis XV, Roller Bearing, Gold Plated $120.00
Hepplewhite, Roller Bearing, Silver Plated.....$72.00
Sheraton, Roller Bearing, N'kel.$60.00
Ye Mission, Roller Bearing, Oxidized Coppered.....$36.00
Transparent, Roller Bearing, Plate Glass top, Nickeled.....$36.00
National Queen, Roller Bearing, Fancy Veneers.....$27.00
Loyal, Roller Bearing, Veneers, Nickeled $25.00
Triple Medal, Roller Bearing, Nickeled $24.00
Marion, Roller Bearing, N'kel.$24.00
Marion Queen, Roller Bearing, Nickeled $24.00
Monarch, Roller Bearing, N'kel.$22.00
Monarch, Roller Bearing, Jap..$20.00
Perpetual, Regular B'r'gs, N'kel.$20.00
Perpetual, Regular B'r'gs, Jap..$18.00
Monarch Extra (17 in. case), Roller Bearing, Nickeled.....$36.00
Monarch Extra (17 in. case), Roller Bearing, Japanned.....$33.00
Auditorium (26 in. case), Roller Bearing, Nickeled.....$54.00
Mammoth (30 in. case), Roller Bearing, Nickeled.....$60.00

NOTE.—Rebates: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five-dozen lots.

Streator Metal Stamping Co.:
Eureka Japanned..... ₱ doz. $15.00
Model E, Sanitaire..... ₱ doz. $25.00
Model A, Sterling..... ₱ doz. $25.00
Model B, Sterling, Nickeled..... ₱ doz. $23.00
Model B, Sterling, Japanned..... ₱ doz. $21.00
Model C, Sterling..... ₱ doz. $21.50
Model D, Sterling..... ₱ doz. $19.50

Tacks, Finishing Nails, &c.

New List, May 1, 1905.
American Carpet Tacks..90&35%
American Cut Tacks.....90&35%
Swedes Cut Tacks.....90&35%
Swedes Upholsterers'.....90&35%
Gimp Tacks.....90&45%
Lace Tacks.....90&45%
Trimmers' Tacks.....90&35%
Looking Glass Tacks.....65%
Bill Posters' and Railroad Tacks, 90&45%
Hungarian Nails.....80&20@—%
Finishing Nails.....70@—%
Trunk and Clout Nails.....80%

NOTE.—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10&5% is given on light weights.

Miscellaneous—

Double Pointed Tacks..... 90&½ or 5 tens

See also Nails, Wire.

Tanks, Oil—

	Each.
Emerald, R. M. Co.	30-gal. $3.40
Emerald, R. M. Co.	60-gal. $4.25
Queen City, R. M. Co.	30-gal. $3.65
Queen City, R. M. Co.	60-gal. $4.50

Tapes, Measuring—

American Asses' Skin ..50@—%
Patent Leather.....25@30&5%
Steel ..... 33 1-3&5%
Chesterman's .....25@25&5%
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkin's:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather....25&5@25&10%
Pocket .....40@40&5%
Steel .....33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger... per 100 lbs. $2.75@$3.00

Thermometers— ₱

Tin Case.....80&10@80&10&5%

Ties, Bale—Steel Wire—

Single Loop.....80&2½%
Monitor, Cross Head, &c.60&10@65%

Brick Ties—

Niagara Brick Ties.....25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White.....20@20&5%

Hay—

Myers' Hay Tools.....50%
Stowell's Hay Carriers, 50%; Hay Forks, 50%; Fork Pulleys, 50%.

Miniature—

Smith & Hemenway Co.'s, Davidson 25%

Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simonds' Improved.....33⅓%
Simonds' Crescent.....25%

Ship—

L. & I. J. White.....25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro.....$11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida.....75@75&5%
Newhouse .....45@45&5%
Hawley & Norton.....65%
Victor .....70&10%
Oneida Community Jump.....50%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8½@9¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ₱ doz., $13.25; case of 24 ..... $11.50 doz.
No. 3, Rat, ₱ doz., $6.50; case of 50 ..... $5.75 doz.
No. 3½, Rat, ₱ doz. $5.25; case of 72 ..... $4.70 doz.
No. 4, Mouse, ₱ doz. $3.85; case of 150 ..... $3.00 doz.
No. 5, Mouse, ₱ doz. $3.00; case of 150 ..... $2.25 doz.

Trimmers, Spoke—

Wood's E 1.....50%

Trowels—

Disston Brick and Pointing... .....25%
Disston Plastering.....20%
Disston "Standard Brand" and Garden Trowels.....30%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ₱ gro. $6.00
Rose Brick and Plastering.....25&5%
Woodrough & McParlin, Plastering.25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks..... ₱ doz. $16.00
Grocery ..... ₱ doz. $15.00
Daisy Stove Trucks, Improved Pattern ..... ₱ doz. $18.50
McKinney Trucks.....each $10.00
Model Stove Trucks..... ₱ doz. $18.50

Tubs, Wash—

M'f'gr's list, price per gross.

No.	0	1	2	3
Galvanized, $64	*$76*	*$84*	*$96*	*10&5%*

Galvanized Wash Tubs (R. M. Co.):

No.	1	2	3	10	20	30
Per doz., net.	$5.70	6.30	7.20	6.60	7.20	8.10

Twine, Miscellaneous—

Flax Twine:
No. 9, ¼ and ⅛-lb. Balls .22@24¢
No. 12, ¼ and ⅛-lb. Balls .20@21¢
No. 18, ¼ and ⅛-lb. Balls .17@19¢
No. 24, ¼ and ⅛-lb. Balls .16@18¢
No. 36, ¼ and ⅛-lb. Balls .15@17¢
Chalk Line, Cotton ¼-lb. Balls ..... 25@30¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz..... 10@18¢
Cotton Wrapping, 5 Balls to lb., according to quality... 14½@22¢
American 2-Ply Hemp, ¼ and ½-lb. Balls..... 13½@14½¢
American 3-Ply Hemp, 1-lb. Balls ..... 14½@15½¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) .9½@10½¢
India 3-Ply Hemp, 1-lb. Balls 9½@10½¢
India 3-Ply Hemp, 1½-lb. Balls. 9@10¢
2, 3, 4 and 5-Ply Jute, ½-lb. Balls ..... 11@13¢
Mason Line, Linen, ½-lb. Bls .46¢
No. 26½ Mattress, ¼ and ½-lb. Balls, according to quality, 30@60¢
Wool, 3 to 6 ply....B 7¾¢; A 9¢

Vises—

Solid Box.....50&10%
Parallel—
Athol Machine Co.:
Simpson's Adjustable.....40%
Standard 40%
Amateur 25%
Columbian Hdw. Co.....40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50.
Machinist and Tool Makers' No. 4A, $12.50; No. 6A, $10.00; No. 10A, $22.50.
Presto Quick Acting Adjustable Jaw, 25@25&10%; Solid Jaw, 35@35&10%
Tiger Machinists'.....40%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $29.50; 5, $27.00.
Hollands':
Machinists' .....40@40&5%
Keystone .....65&@70%
Lewis Tool Co.:
Adjustable Jaw.....30%
Monarch, 50%; Solid Jaw.....50%
Massey Vise Co.:
Clincher 40%
Perfect, 15%; Lightning Grip.....15%
Merrill's 20%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars.....20@25%
Vulcan's .....40@45%
Combination Pipe.....55@60%
Prentiss .....20@25%
Snediker's X. L.....33⅓%
Stephens' 33⅓%

Saw Filers—

Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30%; Clamps.....30%
Perfection Saw Clamps, ₱ doz....$4.50
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....50%

Wood Workers—

Massey Vise Co.:
Lightning Grip, 15%; Perfect.....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe:
87 Series, 50%; 187 Series, 60&5%; No. 870, 40%.

Wads—*Price per M.*

B. E., 11 up .....60¢
B. E., 9 and 10.....70¢
B. E., 8.....80¢
B. E., 7.....80¢
P. E., 11 up $1.00
P. E., 9 and 10..... 1.25
P. E., 8..... 1.50
P. E., 7..... 1.50
Ely's B. E., 11 and larger..$1.70@1.75
Ely's P. E., 12 to 20....$3.00@3.25

Dis. 15%

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:
Enameled .....45&10%
Ground .....50&5%
Plain or Unground.....60%
Country Hollow Ware, per 100 lbs. $2.75
White Enameled Ware:
Maslin Kettles.....65&10%
Covered Wares:
Tinned and Turned.....35&10%
Enameled .....45&10%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware.....60%
Iron Clad Ware.....70&10%
Lava, Enameled.....40&10%
Never Break Enameled.....50%

Tea Kettles—

Galvanized Tea Kettles:

Inch.....	*6*	*7*	*8*	*9*
Each	*45¢*	*50¢*	*55¢*	*65¢*

Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles.....60%
Porcelained .....50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles.....60%
Solid Steel Spiders and Griddles.65&5%
Solid Steel Kettles.....60%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

Solid Zinc: ₱ doz.
Crescent, family size, bent frame.$3.70
Red Star, family size, stationary protector $3.70
Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$3.25
Cable Cross, family size, stationary protector.....$3.40
Single Zinc Surface:
Naiad, family size, open back, perforated $2.90
Single Saginaw Globe.....$2.75
Brass Surface:
Brass King, Single Surface, open back $3.65
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.65
Glass Surface:
Glass King, Single Surface, open back $3.65
Enamel Surface:
Enamel King, Single Surface, ventilated back.....$3.65

Washers—Leather, Axle—

Solid .....60&10@80&10&10%
Patent .....90@90&5%
Coil: ¾ 1 1¼ 1½ Inch.
10¢ 11¢ 13¢ 14¢ per box

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$5.60 4.70 3.40 2.20 3.00
The above prices are based on $5.80 off list.

In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots..... per lb. 1¾@2¢

Weather Strip—

Flexible Felt—

Lined, per 100 ft., $2; $3; $4.....40&10%
Moore's Unlined, per 100 ft., $2; $3; $4 .....50&10%

Wedges—

Oil Finish.....lb. 2.70@2.80¢

Weights—Hitching—

Covert Mfg. Co.....30&2%

Sash—

Per ton, f.o.b. factory:
Eastern District.....$30.00
Southern Territory.$23.00@$24.00
Western and Central Districts .....$22.00@$28.00

Wheels, Well—

8-in., $1.55; 10-in., $2.00; 12-in., $2.50; 14-in., $4.00.

Wire and Wire Goods—

Bright and Annealed:
6 to 9.....80%
10 to 18.....80&2½%
19 to 26.....80&7½%
27 to 36.....80&2½%
Galvanized:
6 to 9.....75&5%
10 to 14.....75&7½%
15 to 16.....72½&10&2½%
19 to 26.....75%
27 to 36.....72½%
Coppered:
6 to 9.....75&5%
10 to 14.....75&7½%
15 to 18.....72½&10&2½%
19 to 26.....75&10&5%
27 to 36.....75%
Tinned:
6 to 14.....75&10&2½%
15 to 18.....75&7½%
Brass .....Net list.
Copper .....30¢ lb., base
Cast Steel Wire.....50%

Spooled Wire—

Annealed and Tinned, 70&10@75&10%
Brass and Copper..60&10@65&10%
Retailers' Assortments, per box, $2.25@$2.50

Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

List June 24, '03.....90@90&10%
Brass Cup Hooks and Brass Screw Hooks.....85@—%

Wire Cloth and Netting—

Galvanized Wire Netting..... 80&5@80&10%
Painted Screen Cloth, 100 ft., $1.25
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft..3 ¢
Nos. 4 and 5 Mesh, sq. ft..3½¢
No. 6 Mesh, sq. ft.....3½¢
No. 8 Mesh, sq. ft.....4 ¢

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural .....75@75&10%
Alligator or Crocodile..70&10@75%
Baxter Pattern S Wrenches.... 70&5@70&10%
Drop Forged S.....45@45&5%
Acme .....60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Steel Handle Nut.....50%
Combination Black.....40&5%
Merrick Pattern.....50%
Boardman's 40%
Coes' Genuine Knife Hdl..40&10&5&5%
Coes' Genuine Steel Hdl..40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes', Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'".....40&10&10&5&5%
Donohue's Engineer.....40&10%
Eaglo 70%
Elgin Wrenches, ₱ doz.....$6.25
Elgin Rethreading Attachment, only with one die, ₱ doz.....$6.25
Elgin Extra Dies, ₱ doz.....$3.00
Elgin Extra Jaws, ₱ doz.....$1.75
Elgin Monkey Wrench Pipe Jaws, ₱ doz.....$2.10
Gem Pocket.....30%
Hercules 70%
W. & B. Machinist:
Case lots.....50&5%
Less than case lots.....50%
W. & B. Railroad Special:
Case lots.....50%
Less than case lots.....40&10&5%
Solid Handles, P., S. & W.....50&5%
Stillson 65%
Vulcan Chain.....50%

Fruit Jar—

Triumph Fruit Jar Wrench, 5 gross lots, ₱ gross, $7.50; ₱ doz.....$0.80

Wrought Goods—

Stables, Hooks, &c., list March 17, '02..... 87½@87½&10%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters'.....list net

Zinc—

Sheet.....per 100 lb., $8.50@$8.75

For the Table of "Current Metal Prices" see the First Issue of Every Month.